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From the Editor's Desk



Congratulations again to the Orchid Society of Western Australia as winning the right to host the 2023 World Orchid Conference in Perth. Some background will be given in the next issue, with special reference to the outstanding government assistance to help secure and promote this event with much professionalism. Western Australia has a strong and proud record when it comes to conferences, having held many successful and memorable events. We will provide updates in future issues of the *AOR*.

Michael Harrison has been interested in Australian native epiphytic orchids since his teens and as a senior ANOS judge, is considered an authority on many of our indigenous species. In this issue Mike gives us an in depth overview of the North Queensland endemic high-elevation species, *Dendrobium fleckeri*. This is also an important parent for breeding *Dendrobium* hybrids with gold and apricot coloured flowers. Mike & Ros have recently moved from the foothills of the Blue Mountains to Mittagong in the Southern Highlands of New South Wales, and have been noting how their orchids have adapted to this new cooler climate at 635 metres, at the base of Mount Gibraltar at 863 metres.

Fred Clarke, from Sunset Valley Orchids, California, USA has written a short summary of some of his recent successful compact *Cattleya* crosses. He is a master hybridiser in a number of genera, generating many awards within the various progeny. Fred will be speaking at the upcoming Australian Orchid Conference this year and will have flasks of his exclusive hybrids available for pre-order.

I have written a new article introducing the genus *Maxillaria*. Sadly many plants in cultivation are incorrectly labelled and I hope this paper goes some way in rectifying this, and explaining these changes and why along the way. Maxillarias are easily grown orchids that really should be more popular in cultivation. Sadly, the doyen of *Maxillaria* research, Eric Christenson, passed away suddenly before completing his monograph on the genus. In 2013, ***Maxillaria: an unfinished monograph*** was posthumously compiled, edited and published as a 2-volume set. This issue of the *AOR* is dedicated to the memory of Eric Alston Christenson (1956–2011).

There are also a number of new terrestrial orchids that are named and officially described for the first time in this issue. Included are some attractive leek orchids (the genus *Prasophyllum*) from northern New South Wales, and some midge orchids, from the genus *Corunastylis*. I also review the new book, ***Native Orchids of the Blue Mountains*** by Sabine Hanisch and Ben Jasiak.

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Cover Shot

Maxillaria meleagris
is an easily grown orchid from Mexico and bordering countries. See the feature on *Maxillaria* species in this issue.
(Plant: Hills District Orchids, Photo: D.P. Banks)

Some Observations and Comments on *Dendrobium fleckeri* Rupp and C. White

by Michael Harrison

I cannot really explain it, but for some reason my plants of *Dendrobium fleckeri* bloomed prolifically this season, and over a remarkably long period. Indeed, I had flowers open on the first plant in time for it to be displayed at St. Ives Orchid Fair (18-20 August 2017), and there were still buds developing and opening on various plants well into January 2018. Most of my plants had several bursts of flowers during this period, although the peak of the season was November, when just about all were in full bloom. Individual flowers lasted around two weeks, and on a warm spring morning the musky hyacinth perfume would hang heavily in the greenhouse air. I do not remember a better year for this lovely species.



Dendrobium fleckeri MCT (MH)

Dendrobium fleckeri occurs in the highlands of far North Queensland, where it grows on trees, shrubs or rocks in rainforest and cloudforest. It is a relatively common species on the mountainous peaks and plateaux between 1000 and 1350 metres on and around the Atherton Tableland. Occasional plants may be seen down to about 900 metres, and it extends up to 1600 metres on the highest peaks such as Mt. Bartle Frere (1611 metres) and Mt. Bellenden Ker (1593 metres). In particular, the upland rainforests of Mount Carbine Tableland and Mount Windsor Tableland, to the north of the Atherton Tableland, support large populations of *Dendrobium fleckeri*. These cool, moist forests are home to many species of epiphytic orchids, and it is not uncommon to see *Dendrobium fleckeri* growing in association with other dendrobiums, as well as numerous other species, especially bulbophyllums.

The species was described by H.M.R. Rupp and C.T. White in 1937 from material collected on Mt. Spurgeon (1317 metres), on the western side of Mount Carbine Tableland. The name commemorates Dr. Hugo Flecker (1884-1957), a radiologist and prominent natural historian who lived and practised in Cairns during the 1930's, 40's & 50's. Amongst other species named after Hugo Flecker is the feared box jellyfish of Australian tropical waters, *Chironex fleckeri*, the most deadly jellyfish in the world, as well as another Australian native orchid, *Cestichis fleckeri* (syn. *Liparis fleckeri*). *Thelychiton fleckeri* (Rupp & C.T.White) M.A.Clem. & D.L.Jones, *Orchadian* 13(11): 491 (2002), is an alternate name.

Dendrobium fleckeri will grow quite happily in quite heavy shade, low down on the trunks of rainforest trees, but it predominantly colonises the main lateral limbs, higher up, where it receives brighter light. At times it may even be seen in full sun, at least for part of the day, especially where it is growing on rock shelves and large boulders. The relatively cool atmospheric conditions in these highland forests allow high light exposure without damage to the foliage, and regular periods of cloud and fog throughout the day provide continuous moisture and coolness. Misty fogs and clouds are a feature of these high elevation regions in the Wet Tropics. They maintain high moisture levels throughout the forest, encouraging a proliferation of epiphytic plant life. Mosses and ferns are abundant, adorning the trunks and branches of rainforest trees, and orchids are plentiful. Drifting and swirling with the breeze, and gently settling on all

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exposed surfaces, the fine droplets slowly coalesce, dripping from leaves and limbs to eventually reach the forest floor. Coupled with periodic heavy rainfall, particularly during the wet season, the large volumes of water harvested across these highlands sustain such major rivers as the Mulgrave, Barron, Mossman, McLeod and Daintree Rivers, to name a few.

At its best development, *Dendrobium fleckeri* will produce pseudobulbs to about 400 mm tall, with 2 or 3 broad, oval shaped leaves. It is not generally a species that grows into a large clump. Typically, a mature plant will carry 6 to 12 flowering sized pseudobulbs. However, in ideal conditions, larger plants are sometimes seen, with upwards of 50 pseudobulbs, but this is far from common. In some places *Dendrobium fleckeri* grows almost exclusively on boulders and rocky outcrops on exposed ridges and mountain tops, and here these lithophytic populations take on a somewhat stunted vegetative form, and they freely produce aerial growths, forming vegetative colonies. Elsewhere, in closed forest situations, typical taller growing forms of *Dendrobium fleckeri* virtually never make aerials.

Usually, *Dendrobium fleckeri* carries 2 or 3 flowers per inflorescence, with a maximum of 4. Flower width ranges from 20 mm to 35 mm. The labellum varies from distinctly 'V' shaped to widely 'U' shaped, and the front edge of the lip is always thickly covered in short white bristly hairs.

Interestingly, the flowers on generally open green and then, over a period of a few days, they become progressively orange. The longer the flowers remain viable, the more intense the colour becomes. This is entirely dependent upon temperature, for even a single hot day of above 30 degrees Celsius will prematurely age the flowers, and they will fade and collapse quite quickly. But if temperatures remain below this, the flowers will increase in intensity to become more and more orange. In some of the predominantly lithophytic populations, the flowers take on a burnt orange tone.



***Dendrobium fleckeri* plants *in situ* MCT (DB)**

Dendrobium fleckeri is closely related to *Dendrobium adae*, and no doubt they have a common recent ancestor. They share a similar vegetative form, they grow in the same general areas, and their perfumes are very similar, although the hyacinth scent in *Dendrobium adae* is a sweeter, more pure fragrance than the thick, heavy presence of *Dendrobium fleckeri*. *Dendrobium adae* has a wider altitudinal range than *Dendrobium fleckeri*, extending down to around 700 metres in some places. This tolerance of slightly warmer conditions has resulted in a wider distribution, from Paluma, near Townsville, north to the Big Tableland, just south of Cooktown. The flowers on *Dendrobium adae* range in colour from white, through cream, yellow and green, to orange and reddish-brown, and it generally blooms 4 to 6 weeks earlier than *Dendrobium fleckeri*. Another closely related species is *Dendrobium finniganensis*, also from high elevations in north Queensland. This species is restricted to a few mountain peaks such as Mt. Finnigan (1083 metres) and Thornton Peak (1374 metres), where it grows as a lithophyte on boulders amongst grasses and other low vegetation. The creamy white flowers usually appear in December and are short-lived if temperatures rise above 30 degrees Celsius for very long.

A rare natural hybrid between *Dendrobium fleckeri* and *Dendrobium adae* was reported in 2014 (Harrison, M. & Banks, D. "A New *Dendrobium* Natural Hybrid from North Queensland", *Australian Orchid Review* 79(1):28-31).



Dendrobium fleckeri
MCT (MH)

The plant was found in an area where the parent species grew together at an altitude of around 1200 metres on the Mount Carbine Tableland. The floral features of this hybrid were intermediate between the parent species.

Dendrobium fleckeri is generally a good subject in cultivation as long as cool, humid conditions can be provided. It will do well potted in a typical open mix of bark and pebbles, with the addition perhaps of chopped coco fibre, perlite and/or polystyrene chips for good aeration. It will not tolerate a boggy, poorly aerated mix, so repotting every 3 to 4 years is recommended. But my preference is to grow it as a mounted plant on a slab of tree fern fibre. To my eye it just looks more natural, with the added advantage of not needing to disturb the plant for many years. A piece of soft brown tree fern fibre (*Dicksonia antarctica*) about 250 mm long and 40 mm to 50 mm thick and wide will support a good sized plant. The soft fibrous nature of this material will allow the roots to penetrate deeply into to centre of the slab to access moisture and remain cool. Hard black tree fern fibre (*Cyathea australis*) is OK, but not as good for *Dendrobium fleckeri* as soft brown. Cork or hardwood slabs are generally unsuitable as they simply do not hold enough moisture.

Dendrobium fleckeri is an orchid that does not like to dry out for any extended period. When grown as a slab plant, I like to water pretty much on a daily basis from the middle of spring to the middle of autumn, depending on weather, to ensure constant moisture is available. Slab culture is a little more demanding with regards to watering, but the advantage is that you cannot really overwater a plant on a slab, as drainage is perfect. Plants grown in pots require less frequent watering, but still be mindful of the need for moisture.

The cool but bright environmental conditions favoured by *Dendrobium fleckeri* can be difficult to replicate in cultivation. Generally speaking, the more light you can provide to your plants, the better they will grow and flower, but there are limits to this. Strong light combined with high temperatures will cause heat stress. Foliage may simply yellow and drop off, or a leaf may burn and brown off along part or all of its length. But the result will be the same: a loss of leaf tissue which will reduce the plant's ability to photosynthesise and weaken it. The other consequence of extended periods of higher than ideal temperatures during the growing season will be a reduction in the length and the thickness of developing pseudobulbs. At times of extreme heat, developing pseudobulbs may simply burn off and be destroyed, although the potential is there for the plant to initiate new growths when more suitable conditions return. I have grown most of my plants of *Dendrobium fleckeri* under two layers of shadecloth, one 70% layer covered in a second layer of 50%. This is probably a little shadier than I would prefer for this species, but it certainly helps to moderate the effects of excessive heat during summer.

During hot periods, the orchid house atmosphere needs to be kept cool and humid, for this species is unforgiving of temperatures much above 30 degrees Celsius for too long, especially if humidity levels are correspondingly low. Hot summer days are the enemy of *Dendrobium fleckeri*, and a plant can become desiccated during periods of extreme weather. Also potentially damaging is hot steamy tropical weather, when plants may feel they are in a sauna. For mountain dwelling species, such conditions are conducive to fungal and bacterial rots.



Dendrobium fleckeri
MCT (DB)

I have found that cold winters present no problems for *Dendrobium fleckeri*. This species will happily tolerate winter time minimums down to at least zero, although protection from frost is essential. In my experience, 70% shadecloth will keep out frost down to around minus one degree centigrade, but anything below this and the leaves of your plants are likely to burn without protection. For some reason, I have found that of all my orchids, *Dendrobium jonesii* is most susceptible to frost burn. In areas where very cold winters are encountered, it may be best to keep your plants under a solid roofed structure rather than just shadecloth.

This most attractive orchid is a delight to have in your orchid collection. As long as you can provide the appropriate cultural conditions, *Dendrobium fleckeri* will grow and thrive without any real problems. It's relatively large, brightly coloured flowers are always much admired, and a plant in full bloom is a memorable sight.

Photos by David Banks and the author, of plants from both the Mount Carbine Tableland and Mount Windsor Tableland.

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Dendrobium fleckeri
MCT (MH)



Dendrobium fleckeri
MCT (MH)



Dendrobium fleckeri
MCT (MH)



Dendrobium fleckeri
flowering plant *in situ*
MWT (MH)



Dendrobium fleckeri
MCT (MH)





Dendrobium fleckeri
Showing variation within eight different individual plants (MH)



Dendrobium fleckeri
MWT (DB)



Dendrobium fleckeri
MWT (DB)



Dendrobium fleckeri
MWT (MH)



Dendrobium fleckeri
MWT (DB)



Dendrobium fleckeri
MWT (DB)



Dendrobium finniganensis
from Mt. Finnigan (DB)





Comparison of
Dendrobium finniganensis (left)
and *Dendrobium fleckeri* (MH)



Dendrobium fleckeri
very large plant *in situ*
MWT (MH)



***Dendrobium* (*fleckeri* x *adae*):**
natural hybrid from the
Mount Carbine Tableland
(MH)

Australian Orchid Review



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AOR 065

A Quick Review of Two Modern Compact *Cattleya* Breeding Trends

Text and photos by Fred Clarke

So what is a Compact-Catt? These are the plants that mature between 20 and 30cm tall and will bloom in a 100mm pot. But why do we want smaller sized plants? If I asked: "who has extra space in their growing area?"... well you get the point. So plants with a smaller footprint work well in our limited growing spaces. This breeding is designed to produce plants with flowers that look like scaled-down standard/large-sized *Cattleya* blooms.

One of the most effective techniques to achieve the goal is to cross small growing plants with their larger counterparts.

A great example are these two hybrids originated by the hybrid late Frank Fordyce: *Slc.* Circle of Life (*Lc.* Culminant x *Sophronitis coccinea*), it appears to be an unlikely pairing however the results have been exceptional with 18 AOS awards. *Lc.* Culminant plants are 40cm tall with flowers measuring 15cm across and *Sophronitis coccinea* plants are about 8cm tall with flowers measuring 7cm across. The resulting plant size of *Slc.* Circle of Life is about 20cm tall and the flowers are 10cm across.

The other example is an equally exceptional hybrid *Pot.* Rubescence (*Blc.* Oconee x *Slc.* Seagulls Apricot) it incorporates *Blc.* Oconee at 35cm tall plant with 15cm flowers and *Slc.* Seagulls Apricot at 13cm tall plant with 7.5cm flowers. The outcome has produced 25cm tall plants and flowers measuring 10cm across.

These two parents have contributed to a successful compact plant breeding line and their progeny are now leading the way for many exceptional new hybrids. These new hybrids are characterised by their bright colours, great shape, well supported flowers and compact plant size. Here are a few of the recent hybrids origination from these two parents.

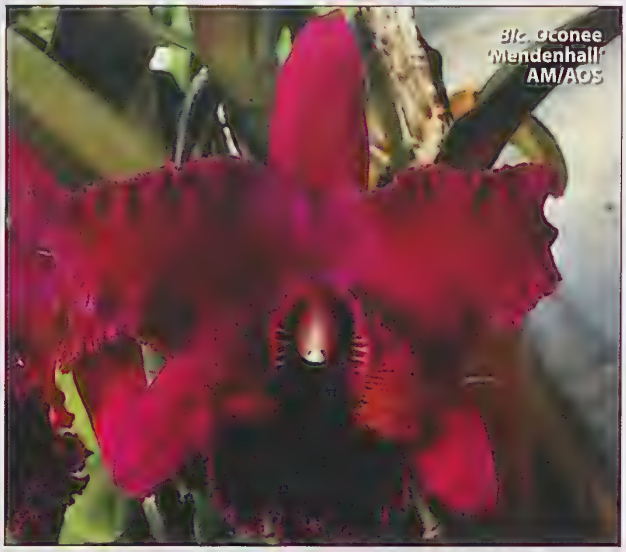
(Fred Clarke owns and operates Sunset Valley Orchids in Southern California; he has been growing orchids for 40 years and has been hybridising for 36 of those years. He is a passionate orchid grower whose curiosity in orchids is broad and varied. Although developing *Cattleya* hybrids has been his sustaining interest, he is also renowned for his breeding of the Catasetinae alliance. Fred will be attending the 21st Australian Orchid Council Conference & Show in July 18-22 2018. He will be presenting talks on Catasetinae and Cattleyas. He will also have flasks for sale of the latest breeding in Catasetinae and Cattleyas, for pre orders please E-mail: fred.clarke@att.net)

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Lc. Culminant 'La Tulierie' AM/AOS


Sophronitis coccinea 'Brilliant Jewel' HCC/AOS


Slc. Circle of Life 'Artistry'


Blc. Oconee 'Mendenhall' AM/AOS


Slc. Seagulls Apricot 'Majestic'


Pot. Rubescence 'SVO' AM/AOS


Pot. Martha Clarke 'Orange Tart' (*Slc.* Circle of Life x *Blc.* Love Sound)


Pot. Martha Clarke 'Outstanding'


Slc. Tokyo Life
'Sunset Valley Orchids'
HCC/AOS
(*Lc.* Tokyo Magic x
Slc. Circle of Life)


(*Pot.* Martha Clarke
x *Slc.* Tokyo Life)
'First to Bloom'


Slc. Pot. Sylvia Wagner
(*Slc.* Circle of Life x
Pot. Elaine Taylor)
'Sunset Valley Orchids'


Pot. Oconee Circle
(*Slc.* Circle of Life x
Blc. Oconee)
'Sunset Valley Orchids'


Pot. Golden Circle
(*Slc.* Circle of Life x
Blc. Goldenzelle)
'OPRL'
(= Orange Petals Red Lip)

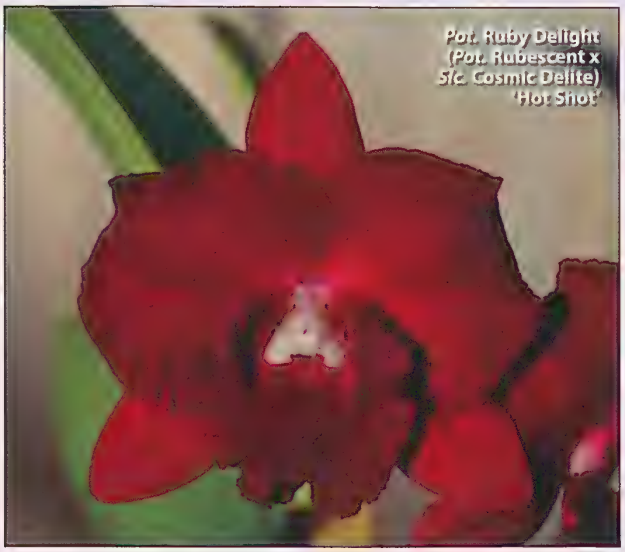

Pot. Louise Clarke
(*Pot.* Rubescence x
Pot. Golden Circle)
'Sunset Valley Orchids'



Pot. Higher Multiplier
(*Pot.* Rubescence x
Slc. Pink Doll)
'Shocking Red'



(*Pot.* Rubescence x
Pot. Paradise Rose)
'Sunset Valley Orchids'



Pot. Ruby Delight
(*Pot.* Rubescent x
Slc. Cosmic Delite)
'Hot Shot'



Pot. Rubescent Fire
(*Pot.* Rubescence x
Lc. Spring Fires)
'Fire Bomb'



Pot. Loud Nine
(*Pot.* Rubescence x
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'First to Bloom'


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(*Pot.* Rubescence x
Lc. Trick or Treat)
'Xmas Red'


Pot. Velvet Rubies
(*Pot.* Rubescence x
Slc. Tangerine Jewel)
'Sunset Valley Orchids'


(*Pot.* Winners' Circle x
Pot. Rubescence)
'First to Bloom'


(*Pot.* Virginia Dickey x
Pot. Rubescence)
'First to Bloom'

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AOR 111

Introducing 30 Different *Maxillaria* Species

Text and photos by David P. Banks

Growing numbers of species orchid enthusiasts are becoming increasingly mad about Maxillarias. This is a complex group of almost 600 species, in need of a full taxonomic revision, from Central and South America, exhibiting an enormous range in plant habit and floral shape, size and colour. They produce from one to three leaves at the top of the pseudobulb. Maxillarias have solitary blooms, from the base of the pseudobulbs (sometimes in vast numbers), and the petals are smaller than the sepals. In the main, they are regular annual bloomers. Maxillarias are essentially epiphytes and lithophytes (there are a handful of terrestrials) of rainforests and cloud-forests in mountainous regions, even though there are a number of tropical lowland species. *Lycaste* is the nearest relative to *Maxillaria*.

Maxillarias have never been a fashionable group of orchids, especially considering the countless horticulturally attractive orchids they coexist with in the wild. Originally they would have been used mainly as packing when shipments of orchids left Central and South American countries to Europe with more valuable cargo that included spectacular genera such as *Catasetum, Cattleya, Miltonia, Odontoglossum* and *Oncidium*, to name a few.

There are many specialist orchid collections around the world (some even dedicated to cultivating just variations within one species, such as *Dendrobium speciosum* and *Laelia anceps*), but I have never seen or heard of one purely devoted and focussed on *Maxillaria*. I would estimate that there may be close to 100 different species of *Maxillaria* now grown in Australia. I would also suggest that many of the older species in cultivation would be the result of divisions of only a handful of originally imported different clones. That's why we don't see the range of genetic diversity in cultivated plants in Australia.

Hybrids

Surprisingly, for such a large genus, there have been few artificial registered hybrids within *Maxillaria*, despite their obvious potential. As at the end of 2017, only 22 hybrids have been bloomed and registered within *Maxillaria*. All but one of these hybrids has been made using the robust and broad-leaved large flowered species such as *Maxillaria sanderiana* (whilst also including showy species such as *Maxillaria fletcheriana, Maxillaria grandiflora, Maxillaria striata* etc.). Some authorities suggest they are genetically closer to *Lycaste*, especially the *Lycaste virginalis / skinneri* complex. I believe this group essentially belong in a genus by themselves, and are not further discussed in this article.

There is a described natural hybrid from southeast Mexico (2001), *Maxillaria* X *yucatanensis* (*tenuifolia* x *variabilis*).

Taxonomy

One factor that quickly became apparent, whilst researching technical information and cross-checking references for this article, was the alarming number of *Maxillaria* species in cultivation that are clearly mislabelled. Many people unwittingly and simply rewrite labels, perpetuating initial errors without checking original descriptions, Type specimens, and significant literature. I sometimes joke that the tag is never wrong, just the wrong plant is in the pot! Even using Google on the Internet to confirm images may create further confusion - as often, several often quite different species, will be shown all under the same name. How do you know which is the correctly applied image to the species being investigated? The *World Checklist of Selected Plant Families* (WCSP), facilitated by the Royal Botanic Gardens, Kew, and published and updated on the Internet; (**http://wcsp.science.kew.org**) is a valuable free resource. Alas, it does have some errors and inconsistencies, but slowly many of these are being reassessed and often corrected. It is an important starting point when researching accepted species orchid names. In this article I have largely accepted the taxonomy proposed by WCSP, however there are some taxa to which I have reservations with or simply do not agree with their interpretations. Specific examples are discussed under the relevant species entries.

Sadly, the doyen of *Maxillaria* research American Eric Christenson (1956–2011), passed away suddenly before completing his monograph on the genus. In 2013, ***Maxillaria: an unfinished monograph*** by Eric A. Christenson was posthumously compiled and edited by Patricia A. Harding, Michael McIllmurray and Mario Blanco. This was published as a two volume set (a staggering 938 pages!), with a printing limited to only 1000 copies.



Selection of Species

▶ *Maxillaria arbuscula* (1856) is found as a terrestrial or low growing epiphyte from Ecuador through Peru to Bolivia. It has slender branching upright stems with the plant often becoming arching to pendulous over time due to the combined weight of the foliage. The 12mm blooms have a pink flush with darker spotting with a contrasting reddish-purple blotch on the labellum. It may bloom sporadically throughout the year with an increase in flowering during the warmer months. I find this species prefers a bit more shade and moisture than others within the genus. I grow this species potted, but I'm sure it would be a great subject for slab culture on thick pieces of soft treefern, as long as you can keep it well watered through the summer months.



Maxillaria arbuscula
(photo: Eric Hunt)

▼◢ *Maxillaria cucullata* (1840) is a highly variable species distributed from Mexico to Central America. The floral shape and ratio of length and width of petals and sepals are fairly constant, as is the labellum shape and calli. Flower size can vary slightly (40-60mm) however the biggest variable is the colour, ranging from greenish yellow through orange and tan tones to solid blood red (rare). There is a degree of darker markings over the bloom, ranging from fine pepper spotting to larger spots and striations. Labellum colour varies from tan to dark brown to almost black. It is a very easy and fast growing species, taking a range of temperature extremes throughout the year. Larger plants are seldom out of bloom, with each pseudobulb capable of producing over a dozen blooms in one year. It's a very prolific species with peak blooming in summer and autumn. It's an ideal beginner's orchid that can handle some neglect and still flower.



Maxillaria cucullata
– typical form of the species



Maxillaria cucullata
– pale coloured form

Maxillaria densa (1836) is a sturdy upright growing species from Mexico to Nicaragua. It has dense clusters of up to 30 white-cream to buff-pink 16mm tall but narrow flowers in spring, all blooming at once. This hardy species is tolerant of a wide temperature and light range. Young plants form a neat cluster of upright growths. Over time, these branch and elongate (as new growths are also produced irregularly at the base of the plant) and as they get progressively longer will tend to arch and bend and become untidy (unless staked from the start). These bent growths may be pruned back quite hard, as new ones will quickly arise from dormant growth eyes at the base of older pseudobulbs. *Maxillaria densa*, like many of the "climbing" upright species produces somewhat dormant roots that are hidden under the dried leaf bases at the base of the pseudobulb. These cuttings may be used to propagate new plants, with these roots quickly reactivating and growing into fresh medium. The blooms have a slight fragrance.



Maxillaria densa
– white-pink coloured form



Maxillaria densa
– buff-pink coloured form

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▶ *Maxillaria echinophyta* (1877) is a delightful and petite miniature species from cool shady montane forests in Brazil. It has pure white flowers with elongated narrow segments and three distinct and well defined dark reddish stripes at the base of the labellum. The specific name refers to the needle-like leaves. *Maxillaria seidelii* (1960) is a later synonym of this unique species.


Maxillaria echinophyta (syn. *Maxillaria seidelii*)

▼▶ *Maxillaria elatior* (1863) is a robust and impressive species from Mexico to Costa Rica in Central America. It's an upright and leafy plant that looks impressive even when out of bloom. It can produce odd flowers throughout the year; however the attractive mustard yellow to reddish-orange 50mm blooms are more plentiful in the warmer months. As long as the plants are protected, this species will handle temperatures around the frost level in winter as well as extreme heat in summer.


Maxillaria elatior – orange coloured form


Maxillaria elatior – tan coloured form

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Maxillaria estradae (1980) is a delightful summer flowering species from Ecuador and Peru. Plants were first imported into Australia (from Ecuador) by Ian Chalmers over 25 years ago. It has creamy yellowish to tan 15mm blooms that display three prominent stripes along both the petals and sepals. The labellum is a contrasting bright yellow with a dark reddish throat. One to five blooms are produced at the same time. Another species that I find prefers quite shaded conditions and constant moisture in a free draining bark-based mix. I have seen plants of this labelled as (the quite different) *Maxillaria funicaulis* (1945), which are actually typical *Maxillaria estradae*.



Maxillaria estradae



Maxillaria estradae
– showing growth habit

Maxillaria hematoglossa (1845) is a spring flowered species from Mexico and Central America that is very close to and sometimes confused with *Maxillaria cucullata* (and sometimes mislabelled as that). It is often seen in collections under its descriptive synonym of *Maxillaria punctostriata* (1876). It always has reddish stripes along the petals and sepals, with a contrasting very dark brown labellum. There are often fine darker spots at the base of the petals. However its distinctive twisting of the lateral sepals seems to be a consistent diagnostic feature. The blooms are also almost twice the size of typical *Maxillaria cucullata*, at times up to 90mm across. I've never had them bloom at the same time to get a comparison photo.



Maxillaria hematoglossa

Maxillaria humilis (2015) is a species from eastern and southern Brazil that is often seen labelled in cultivation as *Maxillaria gracilis* (1832). It was originally described as *Bletia humilis* in 1829, with the specimen and documentation being previously overlooked, until it was corrected and formally transferred to *Maxillaria* only a few years ago. It is a compact, tufted growing plant and is quite variable in colour, especially in regards to markings (or lack of) in the labellum. Many examples of the species have pale greenish yellow blooms with reddish margins that don't open fully. The more desirable horticultural forms of this spring flowered species have richly coloured blooms with distinct labellum markings.


Maxillaria humilis

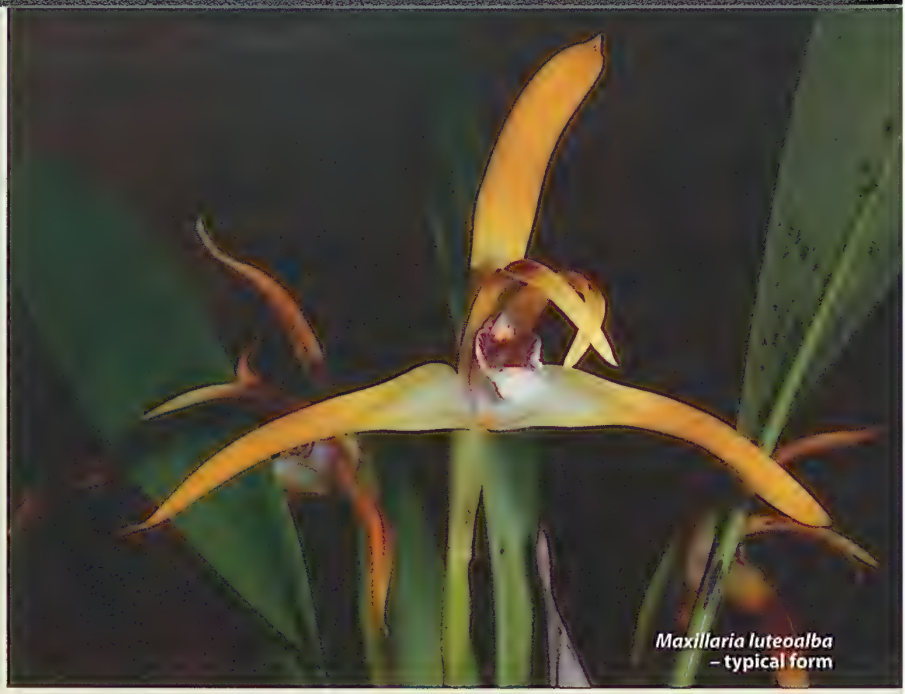

Maxillaria kautskyi

Maxillaria kautskyi (1972) is endemic to southeastern Brazil in the state of Espírito Santo. It is an uncommon species in cultivation. It has white to cream blooms with a while labellum with varying suffusions of pale pink near the margins. One of its distinctive diagnostic features is the contrasting bright red anther cap. *Maxillaria kautskyi* blooms in winter and was named after the late Brazilian botanist and bromeliad expert, Roberto Anselmo Kautsky (1924-2010).


Maxillaria lankesteri

Maxillaria lankesteri (1924) is a very leafy climbing species found from Costa Rica to northeastern Colombia. It is easily recognisable from the distinctive striping over the flower, even though there is quite a variation in flower shape, size and colour. The greenish based flowers have 4 or 5 distinctive brown stripes over the tepals, giving the bloom a somewhat metallic appearance and texture. The labellum is somewhat spoon shaped and often at right angles to the rest of the flower, and are produced throughout the year. The growth habit remains constant, with its generally upright, climbing and branching habit. It's a shade loving species that prefers moist intermediate conditions, with plenty of air circulation.

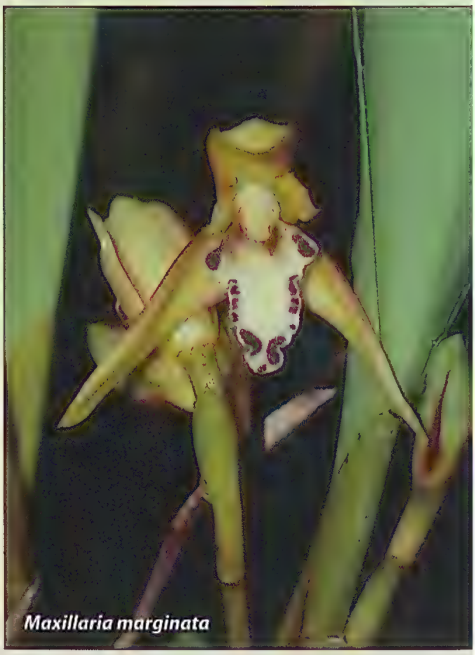
▼▶ *Maxillaria luteoalba* (1846) is quite a variable mountainous species found in northern Ecuador, Colombia and Venezuela. The name literally translates from the Latin to "yellow" and "white", pertaining to the colours of the flowers. Often there is a clear demarcation between these colours about halfway along the narrow floral segments. Some clones have darker flowers than others, often with reddish markings in patches on the back of the bloom. The overall shape of the flowers of this species (and especially the labellum) are fairly constant, as are the hooked petals. There is a rare pale form in cultivation, often incorrectly labelled as *"Maxillaria triloris"*, which itself is a later synonym for the very different *Maxillaria longipetala*. It generally blooms from late summer into autumn.



Maxillaria luteoalba – typical form



Maxillaria luteoalba – pale form



Maxillaria marginata

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▲ *Maxillaria marginata* (1855) is a bifoliate, climbing species from eastern and southern Brazil. It is summer flowering, with cream to dull yellow blooms that often have a reddish-brown marginated border, hence the specific epithet. The flowers rarely open fully, with the tepals protruding forwards and often twisting slightly. The labellum is cream coloured with some maroon spots and blotches, again along the margins. It blooms as the new growths are developing, an unusual feature in this genus as many species only flower off the matured pseudobulb.

Maxillaria meleagris (1844) is an easily grown and common species from Mexico, Guatemala and Panama. It produces large numbers of dark reddish-brown to reddish-orange blooms with darker maroon pepper spotting. It is summer flowering, and readily grows into specimen size. An easily grown and "must have" orchid in the miscellaneous collection. A specimen plant in full bloom is an impressive sight, with a ring of flowers around the base of the pot.



Maxillaria meleagris
– specimen plant



Maxillaria meleagris
– showing plant form

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▼▶ ***Maxillaria neowiedii*** (1876) is a name largely unfamiliar to orchid growers. It's the earliest validly published name of this miniature species from east and south Brazil to Argentina. A year after its description, *Maxillaria vernicosa* (1877) and *Maxillaria vitelliniflora* (1877) were both published in the same year, and many plants in cultivation today still carry these synonymous names. Ironically *Maxillaria neowiedii* is popular in cultivation in New Zealand, often incorrectly under the name of *Maxillaria echinophyta* – which is a different species entirely with pure white elongated flowers. For a miniature species, it is quite fast growing under favourable conditions, producing lots of cute yellowish green to orange blooms. It dislikes hot dry summery conditions and prefers to be grown cool and moist in bright shade, either in shallow pots or rafts of soft treefern fibre.



Maxillaria neowiedii
– form grown in New Zealand



Maxillaria neowiedii
(syn. *Maxillaria vitelliniflora*)



Maxillaria neowiedii
(syn. *Maxillaria vernicosa*)

▼ ***Maxillaria notylioglossa*** (1854) is a common and widespread species throughout tropical Central and South America. It's a cool to warm growing scrambling and branching epiphyte that will quickly grow into specimen size under favourable conditions. Flowers are 20mm across and may vary from greenish-cream to tan and orange tones, and are produced from late summer into autumn. The "V"- shaped incurved labellum with white margins on the edges are a distinctive and unique diagnostic feature for this species. *Maxillaria cerifera* (1877) is a synonym.



Maxillaria notylioglossa
(photo: Jim Cootes)

Maxillaria paranaensis (1882) is the accepted name for the species well established in cultivation as *Maxillaria cogniauxiana* (1934). It is a compact, miniature growing, clumping and branching, species from southern Brazil and Argentina. It has very dark, glossy and long-lived brownish claret blooms that are cup-shaped and produced in late spring to midsummer.

Maxillaria juergensii (1925) is also now included by some authorities as being within the concept of *Maxillaria paranaensis*. For now I prefer to keep them separate. I can readily differentiate the two on plant habit alone, but must admit the flowers are very similar in shape and colour, with slightly smaller blooms. *Maxillaria juergensii* is a miniature, pincushion-like plant with needle-like leaves, which tend to grow tufted and spreading rather than assuming an upright to spreading habit on older growths.



Maxillaria paranaensis (syn. *Maxillaria cogniauxiana*)



Maxillaria juergensii – matches the Type specimen of this species

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Maxillaria picta (1832) is a Brazilian species, with cream to deep yellow blooms that are prominently spotted and striped with purple-brown (in bands across the petals and sepals) on the back of the flower. It is quite a variable species in both plant form and flower size and shape, whilst the colours remain fairly consistent. *Maxillaria picta* is a very popular and reliable species of easy care in cultivation, often blooming profusely annually. It flowers from winter to spring. There is a species described as ***Maxillaria acutipetala*** (1842) that has larger and more open flowers with bolder colours. It also has a more rambling habit with short rhizomes between the pseudobulbs. Most botanical authorities currently refer to this taxon as simply another synonym of *Maxillaria picta*. The flowers have a subtle sweet fragrance that is quite pleasant.



Maxillaria picta



Maxillaria picta
– note the distinct colouration on back of the tepals



Maxillaria picta
(syn. *Maxillaria acutipetala*)

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▼▶ ***Maxillaria porphyrostele*** (1873) is another easily grown species from southern Brazil. It has round pseudobulbs, generally topped with two strap-like leaves. It blooms in early spring, and has long-lasting, 40mm, bright yellow slightly fragrant flowers that open widely. The labellum is also yellow, with some red-brown markings near the base. It is a very hardy species that is popular in cultivation, for many years this species was misinterpreted and frequently mislabelled as *Maxillaria picta*. There is a similar species described as ***Maxillaria chrysantha*** (1877). It has paler flowers with consistently bent, forward facing petals and sepals. The labellum is slightly narrower and is predominantly white. Until I see more different collections of both species, I am inclined to think they both are within the natural variation expressed in *Maxillaria porphyrostele*.


Maxillaria porphyrostele


Maxillaria chrysantha* (left) & *Maxillaria porphyrostele

▶ ***Maxillaria porrecta*** (1838) is a variable species especially in flower colour and size, and is widespread throughout Central and South America, from Nicaragua to Brazil. It blooms in late spring and summer. This name has only recently been resurrected for plants in cultivation. It comes from the Latin *porrect*, meaning extending horizontally, to stretch out, referring essentially to the sepals of this species. This high elevation floriferous species is perhaps better known under the later synonym of *Maxillaria brunnea* (1854).


***Maxillaria porrecta* (syn. *Maxillaria brunnea*)**

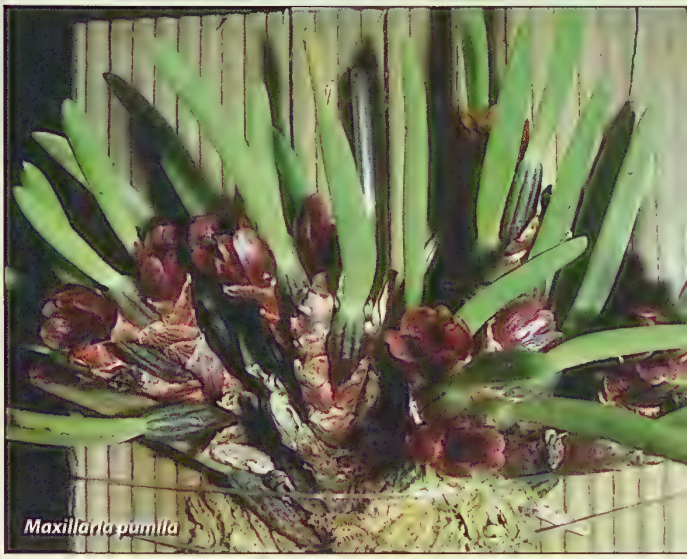
Maxillaria praestans (1885) is a species very closely related to the *Maxillaria cucullata* complex. In fact some botanical authorities include it within that species. It has a very tight clumping and sprawling growth habit and quickly reaches specimen size in cultivation. Flower colour ranges from olive green to orange/tan tones to pale brown, with some examples having heavy striping on the sepals.

Maxillaria pseudoneglecta (1993) is a seldom seen species from Costa Rica to western Panama. Flower colour varies from white through creams to bright yellow, with blooms produced mainly in winter. From a distance it is reminiscent of the Asiatic species, *Bulbophyllum odoratissimum*. This species prefers intermediate to warm conditions and grows well as a mounted specimen. Michael Ferenczi, a species bromeliad and orchid enthusiast, introduced this species into cultivation in Australia almost twenty years ago.


Maxillaria pseudoneglecta


Maxillaria praestans

Maxillaria pumila (1837) is a popular and easily grown miniature Brazilian species that grows well in small pots or as a mounted specimen. It is a prolific bloomer, in spring and early summer, producing small and somewhat cuppy brown flowers often with yellowish tips from the very base of the pseudobulb. It's more of botanical interest than one of horticultural beauty. It is frequently seen in cultivation under the name of *Maxillaria parahybunensis* (1904) which is a different species.


Maxillaria pumila

Maxillaria richii (1994) is a unique pink-flowered species from western Ecuador. It is an intermediate to warm growing species that primarily blooms in the winter months. It may vary in the shade of pink, some have cream flowers stained with pale pink, through to pale musk pink and brownish pink. The shape may also vary, with the most horticulturally desirable examples having broad rounded lateral sepals, as opposed to narrow, pointed ones. It's a slow growing species that likes to be kept moist in bright shaded conditions.



Maxillaria richii
– horticulturally superior form



Maxillaria richii
– typical form

Maxillaria sanguinea (1895) is a warm growing tropical species from Costa Rica and western Panama. It is reminiscent of a smaller, compact version of *Maxillaria tenuifolia*, which it is closely related. The individual 25mm flowers are somewhat cuppy and bright reddish-brown with an intense wine-red labellum tipped with white. It resents temperatures that drop below 10°C in winter, and will shed many of its needle-like leaves if stressed for extended periods, and decline in health. The flowers are also mildly fragrant.



Maxillaria sanguinea

Maxillaria schunkeana (1993) is endemic to Espirito Santo State, Brazil in the coastal Atlantic rainforest. This is another of the plants claiming to be a "black orchid". It does indeed have very dark deep claret to black 25mm flowers. This species is summer blooming and can withstand quite a range of temperatures and climatic conditions and is increasingly popular in cultivation.

Maxillaria sophronitis (1958) is a cool-growing, mat-forming, dwarf species from cloud-forests of Venezuela and Colombia. It has bright, scarlet-red 14mm blooms in early spring. This stunning orchid seems to require a prolonged cooler rest through autumn and winter to initiate flowering. Often growers in warmer climates have difficulty blooming this species, despite vigorous growth. Most successful growers mount their plants on generous sized horizontal rafts of treefern, and give the plants copious water from spring to mid-autumn.



Maxillaria schunkeana



Maxillaria sophronitis
(plant & photo: Lourens Grobler)



Maxillaria sophronitis
(plant & photo: Lourens Grobler)

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Maxillaria tenuifolia (1837) is a popular upright growing species, with long, stiff, grass-like leaves. It is common throughout Mexico and Central America and blooms in summer. It has brownish-red to blood-red 45mm flowers, with a white to cream labellum spotted in reddish maroon. Dark flowered forms are sometimes seen labelled as *Maxillaria curtipes* (1841), a poorly understood taxon, that may be a synonym. There is also an anthocyanin-free form that I saw in the collection of Andy's Orchids, California some years ago. It appeared within a bunch of wild plants of the typical colour form. It has dull mustard yellow flowers with a pure white labellum (tentatively referred to here as *Maxillaria tenuifolia* forma *aurea*). *Maxillaria tenuifolia* is a very easy species to grow in cultivation, and a great beginner's orchid. It tends to look tidier when grown in a pot. I have seen some lovely specimens mounted on large slabs of virgin cork and on treefern. It responds positively to frequent watering throughout the year. This is another species that may be trimmed for cuttings if the plant becomes lanky and untidy. This orchid is most famous and often grown for its strong and pleasant coconut-oil fragrance.



Maxillaria tenuifolia



Maxillaria tenuifolia* forma *aurea – rare anthocyanin-free form

Maxillaria valenzuelana (1907) is a widespread species throughout Tropical America, being found in Cuba, Nicaragua, Costa Rica, Panama, Colombia, Ecuador, Venezuela and Brazil. It has a very distinctive *Iris*-like but pendant growth habit, and for this reason is best grown mounted. If this orchid was growing in the rainforests of Asia, it could be mistaken for an *Oberonia* species. The small 20mm blooms tend to not open fully and are produced on very short stems from within the lower leaf axils, and range in colour from green to yellow with orange tints. It is a warm growing species that may bloom sporadically at any time of the year.



Maxillaria valenzuelana



Maxillaria valenzuelana – showing plant and flowering habit

Maxillaria variabilis (1837) is a common species from Mexico to Panama and northern Colombia and Venezuela. It has an upright habit with a single leaf on the apex of the ovoid pseudobulb, branching in older specimens. The growth habit is fairly constant, yet come clones are more robust and vigorous than others. Blooms appear in spring and summer and are quite long lasting. As the specific name suggests, *Maxillaria variabilis* has flowers that vary in colour between plants from yellow (the most common colour form), orange, red, brown, to a dark claret-black. I find cuttings of this species root very quickly when placed in small pots of *Sphagnum* moss of at least 3 or 4 pseudobulbs. It is another excellent low maintenance beginner's orchid.



Maxillaria variabilis – red/brown form



Maxillaria variabilis – orange form



Maxillaria variabilis – claret black form

Cultivation

Being such an assorted group of sympodial orchids, they have varying cultural requirements. However, most of the species, established in cultivation are cool to intermediate growing plants, enjoy bright light in a humid environment, and are easily grown in pots, with many species, particularly the miniatures, also performing well on slabs or rafts of treefern or cork.

I use a range of squat and standard black pots from the Orchid Pot Company (Port Macquarie, NSW) because of their sturdiness, disability and excellent drainage. I am also experimenting with a few different sizes of "water-well pots" as a number of growers are having some success with these. I am using these under a solid roof so I can control the watering. They help the potting medium stay moister just that little bit longer which is a bonus during warmer weather. However, be cautious about using such pots outside or under shadecloth during prolonged wet spells, especially in winter, when many of these orchids are semi-dormant, otherwise you may have issues with root or crown rot. I do suspend most of my Maxillarias with either plastic or custom made wire hangers from Tinonee Orchid Nursery, NSW. These plants are also quite happy on mesh benches under 70% shadecloth.

Everyone seems to develop a preferred potting medium for various orchids over time. It is important that the potting medium is free draining whilst allowing for some moisture retention. It should be able to last for at least 3 or 4 years before breaking down. Over many years I have generally settled on this combination of components for miscellaneous epiphytic orchids, which includes *Maxillaria*.

Miscellaneous Epiphytic Orchid Mix

- 75% medium grade treated pine bark
- 10% Perlite (coarse or jumbo grade)
- 10% coconut husk chips (12mm)
- 5% river gravel/pebbles (10-15mm)

Some notes on these components. The bark used is from the Radiata or Monterey Pine – *Pinus radiata*, a conifer species native to coastal southern California, USA and Mexico. There are three main suppliers of pine bark in Australia, available in a number of grades including fine, small, medium, large and coarse. For over two decades we have used Ausgro Orchid Bark (50 litre bags) from Biogro in South Australia. It is aged pine bark nuggets that have been semi-treated/composted. I wash it to remove the fines. I find roots take to it almost immediately. I am also happy with Orchiata Pine Bark (40 litre bags) from New Zealand (available from Garden City Plastics), this may be used straight from the bag. The hardest, cleanest and longest-lasting pine bark I have seen is Kiwi Orchid Bark (50 litre bags) that is heat-treated for export and comes out of Taranaki Bark Products in New Plymouth, on the North Island of New Zealand. It is marketed in Australia by Orchidaceous Supplies (www.orchidaceoussupplies.com.au/Kiwi-Orchid-Bark) who are long standing advertisers and supporters of the *AOR*. This bark is harvested from 25 year-old trees that are subject to winter snows, this allows the bark enough time to thicken and develop properly at a relatively slower rate, compared to pine trees grown in warmer climates. I do find if I use it straight out of the bag, it takes a while for the roots to dive into the mix. I prefer to soak it in water for a week or two, and generally treat it with the recipe developed by Neil Finch (that was kept a guarded secret for many years!) when he traded as Down Under Native Orchids over three decades ago.

NF Bark treatment recipe for 70 litres of bark

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- Dolomite - 180 grams (2.6g/L)
- Urea - 70 grams (1g/L)
- Iron (Ferrous) Sulphate - 20 grams (~0.30g/L)
- Potassium Sulphate - 15 grams (~0.20g/L)

Place bark in bin (roughly one and a half 50 litre bags), add dry chemicals, fill to rim with water, let soak for 7-14 days, stirring a couple of times and adding a bit more water a few days later (to replace that soaked up by the bark and evaporation). After this time, drain and rinse thoroughly. I then bag it up again and it's ready to use. Be warned, you will get black-stained hands when using it moist!

I like using perlite. It assists drainage, is lightweight, holds water and won't break down like organic material. I use the coarse grade for plants generally up to 125mm pot size and the jumbo grade for larger pots. If unsure, I will often blend the grades. Some people think that perlite sucks moisture out of the roots. This is a myth that has been passed on, with no hard scientific evidence to back this claim.

I'm reducing my use of coconut husk chips. Some cheaper brands have a very high salt content that is difficult to flush out even with numerous soakings. OrchidMate is the brand I solely use. Under my climate, conditions and watering habits, I find coconut chips often disintegrates into dust after two or three years, taking on a peat-like texture and particle size. Having said that, I find it useful as a component of a mixed potting medium, but never more than 20% of the mix. It does hold more water than bark, but can be difficult to rewet if it dries out fully. These days I only use it as a 10% component of the overall mix. I find it works well for *Maxillaria*, as well as *Bifrenaria*, *Brassia*, *Bulbophyllum*, *Coelogyne*, "Softcane" *Dendrobium* species and hybrids (the REAL Dendrobiums!), *Dendrochilum*, *Lycaste*, *Miltonia* and some *Oncidium*.

I use small amounts of washed river pebbles on plants that I am growing onto specimen size. These tend to stay in their pots longer before repotting again, which is often around five years. Because of this added heaviness, these plants tend to remain on benches. I rarely use pebbles/gravel on hanging plants and sales plants, due to the extra weight.

Propagation by Cuttings

Most *Maxillaria* species are propagated by division when repotting (spring is the preferred time), yet others may be grown from "cuttings". Especially those species that have an upright and climbing habit. Simply peel back the dead leaf bases (that will reveal the stunted roots) and plant in the same medium as adult plants, or sphagnum moss may be used. I have found most success when this is done in late spring. Make sure you have a minimum of three mature growths. Keep these plants a bit more shaded for the next 3 or 4 months and well watered. Species readily propagated this way include *Maxillaria arbuscula*, *Maxillaria densa*, *Maxillaria elatior*, *Maxillaria estradae*, *Maxillaria paranaensis*, *Maxillaria sanguinea*, *Maxillaria tenuifolia* and *Maxillaria variabilis*.

For novices I would highly recommend the following six species. All of these are easily grown, can take a wide range of temperatures and light levels, and most importantly are reliable bloomers with different yet delightful flowers.

6 easily grown *Maxillaria* species for beginners

Maxillaria species	Flower Colour	Flowering Season	Notes
cucullata	Tan to yellow	Throughout year	Fast growing
densa	Cream to pink	Spring	Unusual growth habit
meleagris	Reddish orange	Summer	Prolific bloomer
porphyrostele	Yellow	Early Spring	Reliable flowerer
tenuifolia	Blood red	Late Spring	Coconut oil fragrance
variabilis	Yellow, orange, red, brown, maroon/black	Spring and Summer	Lots of colour forms

Acknowledgements

Most of the plants depicted have been grown and photographed by the author at Hills District Orchids, others illustrated here are from the collections of Andy's Orchids (USA), Bob Bishop, Alan Blake, Jim Brydie, Ian Chalmers, Jim Cootes, Dark Star Orchids, Michael Ferenczi, Geoff & Jean Fulcher, the late George Fuller (NZ), Bruce Lonnon, Orchid Species Plus, Terry Russ and the late Gerardus Staal. Eric Hunt took the photo of *Maxillaria arbuscula*, whilst the images of *Maxillaria sophronitis* are from plants grown and photographed by Lourens Grobler in South Africa.

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– Book review by David Banks



Native Orchids of the Blue Mountains

by Sabine Hanisch and Ben Jasiak

146mm x 210mm, Softcover, 244 pages
ISBN: 9 780646 979564, RRP: $35.00
Book enquiries and sales, email: bluemountainsnativeorchids@gmail.com

This is a refreshing accurate and impressive new book on Australian native orchids. A vast improvement on the last native orchid book, on Australian Dendrobiums, that I reviewed two years ago. That was an embarrassing effort produced by academic experts, self proclaimed to be "meticulous researchers". Ironically after the book review exposed an unacceptable number of errors and factual mistakes, the publishers, author, botanical peers and supporters who "checked" the manuscript all went to ground and remain quiet today. Anyhow, enough of that!

Native Orchids of the Blue Mountains contains information and a vast 500 full colour photographs depicting over 125 species of wild native orchids that occur within the Blue Mountains region of New South Wales. Most of the species covered are seasonally deciduous terrestrials but there are also a number of epiphytic and lithophytic species. The boundaries of the Blue Mountains, for the purposes of this book are essentially political borders rather than geological or botanical limits. The boundary is the Blue Mountains City Council Region.

The authors are locals who live at Mount Victoria in the upper Blue Mountains, with their young daughter. Their project to document the native orchids of the Blue Mountains began less than a decade ago. Obviously this work doesn't cover the entire orchid flora the Blue Mountains, but it is very close. To achieve over 125 different taxa, in less than a decade, is most impressive. Remember they have only included species they have seen and in most cases photographed themselves.

But don't be fooled by this. What they lack in experience, they make up for in enthusiasm. Sabine has been the driving force of the book, and has shared much information and new finds backed with outstanding photographs on various native orchid groups on Facebook. Sabine has used this platform to contact other enthusiasts and actively networked with these people. Many have shared locations of rarer or unusual species, however many of these orchids have been located through Sabine spending many hours of the day in the bush, looking for something new. Many of Australia's finest orchidologists have been enthusiastic amateurs rather than trained regimented botanical experts.

Sabine is a bit of a free spirit and I personally think she is trying to follow the footsteps of Isobel Bowden (1908-1986), an eccentric amateur botanist from Woodford in the Blue Mountains. She possesses a very keen eye with attention to detail. This is most evident in her correct identifications of many of the more botanical species that often go unnoticed or overlooked, such as within the genera *Corunastylis* and *Speculantha*. The most modern taxonomy has been used. In most cases the alternate names are listed under synonyms.

There is brief discussion on the various vegetation types and habitats of the Blue Mountains, supported by photographs. Now we come to the main section. The orchid species are presented in alphabetical order, almost exclusively with multiple images of each taxon over two pages. The photography is sharp and shows the diagnostic features of the flower, in true colour, to assist with positive identification. Overall the photographs are first class, which adds to the value of the book as these are all new images that have not previously been published. Common names are included as well as etymology, synonyms, flowering time, description, habitat, altitude and locality (nearest town) where the actual specimens were photographed. This last point is most important and valuable. As all the images document Blue Mountains examples. Whilst there are many orchids endemic to the Blue Mountains, there are numerous species that occur outside the study area. Including the locality gives the book further credibility and is valuable from a botanical and historical viewpoint.

At the back of the book there are photographic sections on landscapes of the Blue Mountains (lots of pretty pictures) as well as some of the unique insects, spiders, reptiles and other animals from this region. Some of this macro photography is simply superb. Plus four pages of eclectic fungi! It's clear the authors are passionate about nature photography and have an obvious enthusiasm and love of the Blue Mountains.

Now to the errors!

Well I still cannot find any! As mentioned earlier, it's not a complete treatment of the orchids of the Blue Mountains, but it's very close. There are a few epiphytes that have been recorded historically and by enthusiasts in recent times, but these often involved fallen branches plus an element of luck. Examples include *Bulbophyllum elisae* (Wentworth Falls & Mount Wilson), *Dendrobium aemulum* (I did see this 30 odd years ago on ironbark trees at Springwood Golf Course), *Dendrobium melaleucaphilum* (near Colo River, just outside study area) plus *Papillilabium beckleri* and *Sarcochilus olivaceus* (near Bilpin/Mountain Lagoon, also just outside study area). The Eastern Underground orchid, *Rhizanthella slateri* has been found in a couple of sites in the upper Blue Mountains. Plus the rare saprophytic *Cryptostylis hunteriana* has been found at Mount Banks. There are still other terrestrials, some undescribed, to be found, photographed and documented.

This book should form part of the libraries of all those interested in Australian orchids, species orchids, wildflowers of New South Wales, naturalists and bushwalkers/photographers who like to identify all the various life forms they see whilst in the bush. Be a tad cautious about using this book in the field, as I fear the pages may stick together if water or other moisture drops on the pages. It would also make a great gift for interstate or overseas friends who grow orchids, and may get tempted to visit, once they see the beautiful range and diversify of the Blue Mountains orchid flora. Congratulations to the authors on producing a new and significant addition to the melting pot of Australian orchid literature.

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Six new species of *Prasophyllum* R.Br. in the *Prasophyllum patens* R.Br. / *Prasophyllum odoratum* R.S.Rogers complex from northern New South Wales

by David L. Jones and Lachlan M. Copeland

Abstract

Six species in the *Prasophyllum patens/odoratum* complex, namely *Prasophyllum basalticum, Prasophyllum brevisepalum, Prasophyllum graniticola, Prasophyllum pilligaense, Prasophyllum holzingeri* and *Prasophyllum pictum*, are described here as new. Each new species is compared and contrasted to similar taxa and notes are given on their distribution, habitat, etymology and conservation status.

Key Words

Orchidaceae, *Prasophyllum odoratum, Prasophyllum patens, Prasophyllum basalticum, Prasophyllum brevisepalum, Prasophyllum graniticola, Prasophyllum pilligaense, Prasophyllum holzingeri, Prasophyllum pictum*, new species, New England Tableland, New South Wales, Australian flora.

Introduction

The New England Tablelands region in north-eastern New South Wales (NSW) is well-known as a botanical hotspot with a high degree of endemism. Numerous species of narrow endemic terrestrial orchid taxa are known to occur in the area (Jones 2006) with many of these being undescribed and poorly known (Bishop 1996; Copeland 2005). Among these are numerous species of Leek Orchid (*Prasophyllum* sp.) that have been incorrectly referred to as either *Prasophyllum patens* R.Br. or *Prasophyllum odoratum* R.S.Rogers.

Prasophyllum patens, which was described by the Scottish botanist Robert Brown in 1810, is from coastal and near-coastal areas of central NSW. It is characterised by unscented or lightly scented flowers 8-10 x 6-8 mm which have green to greenish brown sepals and petals and a crystalline white labellum with a green callus. It has an oblong-obovate labellum 6-7 x 2.5 mm and a narrow tapered callus, c. 3.5 x 1.5 mm, ending at the bend in the labellum.

Since its description in 1909 the epithet '*odoratum*' has been misapplied to many taxa throughout South Australia, Victoria, Queensland, Tasmania and NSW, though *Prasophyllum odoratum* in the strict sense is restricted to South Australia and far south-western Victoria. *Prasophyllum odoratum* is characterised by strongly scented flowers 14-16 x 10-12 mm which have greenish or brownish sepals and petals and a white or pink labellum with a green or yellowish green callus. It has a linear-elliptical labellum 9-12 x 4-4.5 mm with a narrowly tapered callus, c. 5 x 1.5 mm, extending just past the labellum bend.

Close examination of a wide range of taxa in this complex reveals that there are many species which can be distinguished on the basis of their morphology, habitat preferences and flowering time. This paper describes six of these poorly known species from northern NSW and gives notes on their distribution, ecology, distinguishing features, etymology and conservation status.

Taxonomy

1. ***Prasophyllum basalticum*** D.L.Jones & L.M.Copel., ***sp. nov.*** With affinity to *Prasophyllum patens* R.Br. but differing by its much larger flowers (12-15 x 7-12 mm *cf.* 8-10 x 6-8 mm in *P. patens*), larger oblong-lanceolate labellum (8.5-10.5 x 3.5-4 mm *cf.* oblong-obovate labellum 6-7 x 2.5 mm *P. patens*) and a larger labellum callus (c. 4.5 mm x 2.5 mm *cf.* c. 3.5 x 1.5 mm in *P. patens*).

Type: NEW SOUTH WALES: Northern Tablelands; Werrikimbe National Park, c. 70 km ESE of Walcha, along NE edge of Racecourse Swamp, 14 Nov. 2004, *L.M. Copeland 3838* (holo CANB 589537, iso MEL, NSW).

Description: Tuberous terrestrial *herb* to 400 mm tall, growing singly. *Tubers* not seen. *Leaf* terete, 20-35 cm long, 3-5 mm wide, dark green, shiny; base c. 2-4 mm diam., purplish; free lamina erect, 10-25 cm long. *Inflorescence* a sparse to moderately dense spike 7-15 cm long, consisting of c. 5-15 flowers. *Floral bracts* ovate, 2-2.5 mm long, c. 2 mm wide, closely embracing the ovary; apex acute to acuminate. *Ovaries* at 20-30° to the rachis, obovoid, 4-5 mm long, 2-2.5 mm wide, green, shiny. *Flowers* sweetly scented, sessile to subsessile, 12-15 x 7-12 mm, sepals greenish red to brownish red or brown, petals white with a central red band and labellum white with a yellowish callus. *Dorsal sepal* decurved to incurved, narrowly ovate-lanceolate, 8-10 mm long, 2.5-3 mm wide, with three fine darker nerves; apex long-acuminate. *Lateral sepals* free, divergent, obliquely erect, tips recurved, linear-lanceolate, 8-10 mm long, 1.6-2 mm wide, falcate, base not gibbous; distal margins



Prasophyllum basalticum
New England National Park,
NSW

involute; apex entire, acuminate. *Petals* porrect to widely spreading, linear-spathulate, 8-10 mm long, 1.7-2 mm wide, white with a red central band; distal margins dilated, entire or irregular; apex subacute to obtuse. *Labellum* sessile, porrect in the proximal half, recurved at more than right angles near the middle; apex recurved and often extending through the lateral sepals. *Labellum lamina* oblong-lanceolate when flattened, 8.5-10.5 mm long, 3.5-4 mm wide, white; base not gibbous; proximal margins entire, curved; distal margins strongly undulate/crispate; apex obtusely apiculate. *Callus* ovate-elliptic, ending just beyond the labellum bend, 4.5-5 mm long, 2.3-2.6 mm wide, yellow to yellowish-green with a dark green basal area; apex emarginate. *Column* porrect from the end of the ovary, c. 3.5 mm long, c. 3.2 mm wide; appendages oblong-elliptic, c. 3 mm long, c. 0.8 mm wide, straight, white or pink; apex obtuse. *Anther* much shorter than the stigmatic plate, ovate, c. 2 mm long, c. 1.2 mm wide, brownish purple to dark purple. *Pollinarium* c. 3 mm long; viscidium ovate-elliptic, c. 0.3 mm long; hamulus linear, c. 0.8 mm long; pollinia c. 1.6 mm long, yellow, sectile. *Stigma* quadrate, c. 1.5 mm long, c. 1.8 mm wide, set very high on the column; rostellum higher than the appendages. *Capsules* not seen.

Distribution and ecology: Restricted to higher areas of north-eastern New South Wales where known from four populations between the Barrington Tops and the Ebor and Dorrigo districts. Altitudes range from 700-1550 m while the flowering period is usually early November to late December. All four known populations grow in grassy woodlands dominated by Snow Gum (*Eucalyptus pauciflora*) and *Banksia integrifolia* subsp. *monticola*, these areas subject to severe frost and occasional snow. Soils are clay loams derived from basalt.

Recognition: Characterised by relatively short habit, short inflorescence with few (c. 5-15 flowers) moderately crowded to well-spaced, greenish red to brownish red or brown flowers (12-15 x 7-12 mm), white linear-lanceolate petals, each with a central red band, and a white labellum with strongly wavy/crinkled margins and a yellowish callus. The lateral sepals and petals mostly spread widely but occasional plants have porrect to incurved petals and slightly divergent lateral sepals. The relatively narrow oblong-lanceolate labellum has strongly undulate/crispate margins and a short yellow callus ending just beyond the labellum bend. The column is relatively narrow with straight appendages shorter than the rostellum.

Similar species: This species is part of the *Prasophyllum patens* R.Br. - *Prasophyllum odoratum* R.S.Rogers complex. *Prasophyllum patens*, which is mainly from coastal and near-coastal areas, can be distinguished from it by much smaller flowers (c. 6-8 mm across), a shorter oblong-obovate labellum (6-8 x 2.5-3 mm) with finely crenate margins and a narrow labellum callus (c. 3.5-4 x 1.5-2 mm). *Prasophyllum odoratum* is a much taller species (50-70 cm tall) with up to 40 flowers. It also has larger flowers (14-16 x 10-12 mm) than the new species and a linear-elliptical labellum (9-12 x 4-4.5 mm) with a narrow callus (c. 5 x 1.5 mm) that extends just beyond the labellum bend.

Notes: The species appears to flower freely in the absence of fire although a considerable number of plants were observed flowering in Dorrigo National Park following an environmental burn so it is likely that flowering may be enhanced by fire. Records of plants in the *Prasophyllum patens/odoratum* complex from montane areas in Ben Halls Gap and Mt Kaputar National Parks are likely to be this species given the similar habitat available, but these have not been observed by us and require further investigation. The species grows sympatrically with another member of the *Prasophyllum odoratum* complex described in this paper (*Prasophyllum holzingeri*) though *Prasophyllum basalticum* has always finished flowering well before the first flowers of *Prasophyllum holzingeri* begin to open. No hybrids or intermediates have been observed.

Conservation status: Known from at least four populations, all of which are conserved within National Parks. Plants are relatively uncommon at all locations and fewer than 500 plants are known. Threats include the digging up of tubers by feral pigs in the Werrikimbe NP population and invasion by Scotch Broom (*Cytisus scoparius*) in the Barrington Tops. A ROTAP code of 3RCit following the criteria of Briggs and Leigh (1996) is suggested, while the species would likely meet the criteria of being listed as Vulnerable under both state and federal legislation.

Etymology: The epithet *basalticum* is in reference to most populations occurring on rich, dark loams derived from basalt rock.

Specimens examined: NEW SOUTH WALES: Northern Tablelands: Point Lookout, New England National Park, 13 Dec. 1998, *L.M. Copeland 1098* (NE); New England National Park, Thungutti area near Point Lookout, 19 Dec. 2000, *L.M.Copeland (ORG 3270)* (CANB 620146); Werrikimbe National Park, c. 60 km E of Walcha, 100 m SW of Mooraback Rest Area, 7 Dec. 2003, *L.M. Copeland 3649* (CANB, NE, NSW); Werrikimbe National Park, c. 70 km ESE of Walcha, 100 m NE of Mooraback Rest Area, 14 Nov. 2004, *L.M. Copeland 3842* (CANB, NE); Dorrigo National Park, along eastern edge of Killungoondie Plain, 400 m E of bridge over Wild Cattle Ck, 31 Oct 2006, *L.M. Copeland 4128* (NE).


Prasophyllum basalticum
Werrikimbe National Park, NSW

2. *Prasophyllum brevisepalum* D.L.Jones & L.M.Copel., ***sp. nov.*** With affinity to *Prasophyllum odoratum* R.S.Rogers but differing by its short dorsal sepal (7-9 mm long *cf.* 8-11 mm long in *P. odoratum* and short lateral sepals (6-7 mm long *cf.* 8-10 mm long in *P. odoratum*) which remain more or less parallel and often with recurved tips (widely divergent in *P. odoratum* with spreading tips), and a wider yellow callus (2.5-3 mm wide *cf.* 1.5 mm in *P. odoratum*) extending well beyond the bend in the labellum.

Type: NEW SOUTH WALES: North Western Slopes: c. 15 km NNW of Inverell (exact locality withheld for conservation reasons), 27 Sep 2010, *L.M. Copeland 4462* (holo CANB; iso NE, NSW).

Description: Tuberous terrestrial *herb* to 400 mm tall, growing singly. *Tubers* not seen. *Leaf* terete, 20-35 cm long, 3-5 mm wide, dark green, shiny; base c. 3-5 mm diam., purplish; free lamina erect, 12-20 cm long. *Inflorescence* a moderately dense to dense spike 10-15 cm long, consisting of c. 15-35 flowers. *Floral bracts* ovate, c. 2.5 mm long, c. 2.5 mm wide, closely embracing the ovary; apex apiculate. *Ovaries* at 30-40° to the rachis, obovoid, 4-5 mm long, 2.5-3 mm wide, green, shiny. *Flowers* sweetly scented, sessile to subsessile, 12-15 x 7-12 mm, sepals yellowish green to brownish green, petals white with a central red-brown band and darker lines, labellum white with a yellowish callus. *Dorsal sepal* decurved to incurved, ovate-lanceolate, 7-9 mm long, 2.5-3 mm wide, with three to five darker nerves; apex long-acuminate. *Lateral sepals* free, more or less parallel or slightly divergent, erect, and strongly recurved, linear-lanceolate, 6-7 mm long, 2.5-3 mm wide, falcate, base not gibbous; distal margins involute; apex entire, acuminate. *Petals* porrect to widely spreading, linear, 7-8 mm long, 1-1.8 mm wide; distal margins entire or irregular; apex acute. *Labellum* sessile, porrect in the proximal half, recurved at c. right angles near the middle; distal half erect, apex recurved but often not extending through the lateral sepals. *Labellum lamina* oblong-lanceolate when flattened, 8.5-10.5 mm long, 4.5-5.5 mm wide, white; base not gibbous; proximal margins entire, curved; distal margins strongly undulate/crispate; apex obtusely apiculate. *Callus* ovate-lanceolate, ending well beyond the labellum bend, 4.5-5.5 mm long, 2.5-3 mm wide, yellow to yellowish-green with a dark green basal area; apex entire or shallowly emarginate. *Column* details unknown. *Capsules* not seen.

Distribution and ecology: Currently known only from a single population 15 km NNW of Inverell in northern NSW at an altitude of 630 m. The flowering period is usually mid September to mid October. The population grows in grassy woodland dominated by Yellow Box (*Eucalyptus melliodora*) and Blakelys Red Gum (*Eucalyptus blakelyi*) with a diverse ground layer dominated by Kangaroo Grass (*Themeda triandra*) and Snow Grass (*Poa sieberiana*). The soil is a rich, chocolate clay loam derived from basalt.

Recognition: Characterised by early to mid spring flowering, robust habit, moderately crowded to densely crowded yellowish green to brownish green flowers with white petals, each with a central red-brown band, and a white labellum with strongly wavy/crinkled margins and a prominent wide yellow callus that extends well beyond the bend in the labellum. The lateral sepals are noticeably shorter than the other tepals and remain more or less parallel and strongly recurved towards the apex. The porrect to spreading petals are narrow (often only 1 mm wide). The large oblong-lanceolate labellum has strongly undulate/crispate margins and a prominent broad yellow callus.

Similar species: Although generally similar to other members of the *Prasophyllum patens/odoratum* complex in northern NSW this species can be immediately recognised by the short sepals, particularly the lateral sepals which remain more or less parallel and are often strongly recurved at the apex.

Notes: The species seems to flower freely in the absence of fire, although it flowers very poorly in severely dry seasons. It appears to have been first discovered by Robert and Camilla Higgins, two naturalists from the Inverell district with a special interest in native orchids.

Conservation status: Known only from a single population of approximately 70 plants (Robert Higgins pers. comm.) in a Travelling Stock Reserve (TSR) subject to occasional grazing. Threats include an inappropriate grazing regime (i.e. heavy grazing between August and December) and invasion by exotic weeds such as Coolatai Grass (*Hyparrhenia hirta*) which is abundant nearby. A ROTAP code of 1E is suggested following the criteria of Briggs and Leigh (1996), while the species would also likely qualify for listing as Endangered under both state and federal legislation.

Etymology: From the Latin *brevis*, short, *sepalum*, sepal, referring to the short sepals.



Prasophyllum brevisepalum
Inverell district, NSW



Prasophyllum brevisepalum
Inverell district,
NSW

3. ***Prasophyllum graniticola*** D.L.Jones & L.M.Copel., ***sp. nov.*** With affinity to *Prasophyllum odoratum* R.S.Rogers but differing by acuminate to long-acuminate tips on the sepals and a much broader and more conspicuous raised yellow labellum callus (3.5-4 mm wide *cf.* 1.5 mm wide in *P. odoratum*) extending well beyond the bend in the labellum.

Type: NEW SOUTH WALES: Northern Tablelands: c. 10 km W of Ebor (exact locality withheld for conservation reasons), 13 Dec 2003, *L.M. Copeland* 3658 (holo CANB; iso NE).

Description: Tuberous terrestrial *herb* to 600 mm tall, growing singly. *Tubers* not seen. *Leaf* terete, 30-55 cm long, 3-5 mm wide, dark green, shiny; base c. 3-4 mm diam., purplish; free lamina erect, 10-20 cm long. *Inflorescence* a moderately dense spike 8-15 cm long, consisting of c. 10-25 flowers. *Floral bracts* ovate, 2.5-3 mm long, c. 2.3 mm wide, closely embracing the ovary; apex acute to acuminate. *Ovaries* at 20-30° to the rachis, obovoid, 4-5 mm long, 2.5-3 mm wide, turgid, green, shiny. *Flowers* scented, sessile to subsessile, 14-16 x 7-10 mm, greenish to brownish, white petals with a central red band and a white labellum with a yellow callus. *Dorsal sepal* decurved to incurved, ovate-lanceolate, 8-10 mm long, 3.5-4 mm wide, with three darker nerves; apex long-acuminate. *Lateral sepals* free, widely divergent, obliquely erect, tips recurved, linear-lanceolate, 8-10 mm long, 2-2.2 mm wide, falcate, base not gibbous; margins strongly involute over most of the length; apex entire, acuminate. *Petals* porrect to widely spreading, linear to linear-spathulate, 8-10 mm long, 1.7-2 mm wide, white with a red central band, three darker nerves present on the inner surface; distal margins dilated, entire or irregular, sometimes broadly dilated with ruffled margins; apex subacute to obtuse. *Labellum* sessile, porrect in the proximal half, recurved at more than right angles near the middle; apex recurved and often extending through the lateral sepals. *Labellum lamina* oblong-lanceolate when flattened, 8.5-10.5 mm long, 4-4.5 mm wide, white; base slightly gibbous; proximal margins folded once, curved; distal margins strongly undulate/crispate; apex obtusely apiculate. *Callus* ovate-cuneate, ending well beyond the labellum bend, 5.5-6.5 mm long, 3.5-4 mm wide, yellow with a dark green basal area; apex entire or with a small notch, papillate. *Column* porrect from the end of the ovary, c. 4 mm long, c. 2.8 mm wide; appendages obovate-falcate, c. 4 mm long, c. 1 mm wide, white; apex obtuse. *Anther* much shorter than the stigmatic plate, ovate, c. 2 mm long, c. 1.6 mm wide, dark brown. *Pollinarium* c. 3 mm long; viscidium ovate-elliptic, c. 0.4 mm long; hamulus linear, c. 0.8 mm long; pollinia c. 2.2 mm long, yellow, sectile. *Stigma* quadrate, c. 1.2 mm long, c. 1.8 mm wide, set very high on the column; rostellum about as high as the appendages. *Capsules* not seen.

Illustration: Page 557 of Copeland (2005, as "*Prasophyllum* sp. aff. *odoratum* (NT granite)".

Distribution and ecology: Known with certainty only from two populations c. 50 km apart in the Ebor and Backwater districts of northern NSW, but likely to be more widespread. Altitudes are approximately 1200 m while the vegetation is layered woodland with a diverse groundlayer dominated by Snow Grass (*Poa sieberiana*), Bracken (*Pteridium esculentum*) and Spiny-headed Mat-rush (*Lomandra longifolia*). The soil is a shallow sandy loam derived from granite. Flowering occurs from late November to late December.

Recognition: Characterised by late flowering, robust habit, moderately crowded greenish to brownish flowers with white petals, each with a central red band, and a white labellum with strongly wavy/crinkled margins and a prominent yellow callus. The lateral sepals spread widely and have strongly involute margins over most of their length. The petals, which mostly spread widely apart (occasional plants have porrect to incurved petals) are dilated towards the apex (sometimes broadly dilated with ruffled margins). The large oblong-lanceolate labellum has strongly undulate/crispate margins and a prominent yellow callus with a papillate apex, extending well beyond the labellum bend. The column is relatively narrow with broad curved appendages about as high as the rostellum.

Notes: The species does flower in the absence of fire although preliminary observations suggest that greater numbers of plants may flower following a summer fire the previous season (Copeland 2005). *Prasophyllum basalticum*, also described as new in this paper, occurs around Ebor but is shorter growing with fewer flowers.

Conservation status: Known only from two small populations totalling less than 20 plants, the biggest population of which is in a Travelling Stock Reserve (TSR) subject to occasional grazing. Threats include an inappropriate grazing regime and the extremely low numbers. A ROTAP code of 2E is suggested following the criteria of Briggs and Leigh (1996), while the species would also likely qualify for listing as Critically Endangered on both the *NSW Threatened Species Conservation Act 1995*, and the commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Etymology: *graniticola*, from *graniticus*, granite rock, *-cola*, dweller, in reference to its occurrence on soils derived from granite as opposed to the much more widespread and common species that occurs in soils of basaltic origin.





Prasophyllum graniticola
10km W of Ebor,
NSW

4. ***Prasophyllum holzingeri*** D.L.Jones & L.M.Copel., ***sp. nov.*** With affinity to *Prasophyllum dossenum* R.Bates & D.L.Jones but differing by its narrower labellum (4-4.5 mm *cf.* 5-6 mm wide in *P. dossenum*) which is oblong (ovate to ovate-oblong in *P. dossenum*), and an oblong callus (ovate-cuneate in *P. dossenum*).

Type: NEW SOUTH WALES: Northern Tablelands: Barrington Tops State Conservation Area (exact locality withheld for conservation reasons), 1 Feb 2004, *L.M. Copeland 3682* (holo CANB 584684; iso NE).

Description: Tuberous terrestrial *herb* to 300 mm tall, growing singly. *Tubers* not seen. *Leaf* terete, 30-45 cm long, 2-3 mm wide, dark green, shiny; base c. 2-3 mm diam., purplish; free lamina erect, 10-30 cm long. *Inflorescence* a moderately dense spike 8-15 cm long, consisting of c. 8-15 flowers. *Floral bracts* elliptic, c. 2 mm long, c. 2 mm wide, closely embracing the ovary; apex apiculate. *Ovaries* at 20-30° to the rachis, obovoid, 3.5-4 mm long, 2.5-3 mm wide, turgid, green, shiny. *Flowers* unscented, subsessile, 8-10 x 7-9 mm, greenish to brownish pink, petals white or pink with a central red band and labellum white or pink with a yellow callus. *Dorsal sepal* incurved, ovate-lanceolate, 8-10 mm long, 3.5-4 mm wide, with three to five darker nerves; apex long-acuminate. *Lateral sepals* fused towards the apex, often free with age and then divergent, obliquely erect, tips recurved, linear-lanceolate, 8-10 mm long, 2-2.5 mm wide, falcate, base gibbous; margins strongly involute over most of the length; apex entire, acuminate. *Petals* porrect to widely spreading, linear, 8-10 mm long, 1.8-2 mm wide, white with a red central band, three darker nerves present on the inner surface; distal margins entire or irregular; apex acute to acuminate. *Labellum* sessile, porrect in the proximal half, recurved at more than right angles near the middle; apex recurved and often touching the base of the labellum. *Labellum lamina* oblong-lanceolate to elliptic-lanceolate when flattened, 8.5-9.5 mm long, 4-4.5 mm wide, white; base slightly gibbous; proximal margins curved; distal margins strongly folded/crispate; apex apiculate. *Callus* oblong, ending well beyond the labellum bend, 6-6.5 mm long, 2.5-3 mm wide, deeply grooved, yellow or greenish yellow with a dark green basal area and a white margin; apex entire or emarginate, papillate. *Column* porrect from the end of the ovary, c. 4 mm long, c. 3 mm wide; appendages obovate, c. 3 mm long, c. 1 mm wide, pink or white; apex obliquely truncate. *Anther* shorter than the stigmatic plate, ovate, c. 2.5 mm long, c. 2 mm wide, dark purple. *Pollinarium* c. 3 mm long; viscidium ovate-elliptic, c. 0.4 mm long; hamulus linear, c. 1 mm long; pollinia c. 2.4 mm long, yellow, sectile. *Stigma* quadrate, c. 1.5 mm long, c. 2 mm wide, set very high on the column; rostellum slightly higher than the appendages. *Capsules* not seen.

Distribution and ecology: Known with certainty only from a few populations in the Barrington Tops in northern NSW at altitudes of approximately 1400 m. Flowering has been observed from late January to early March. Plants grow in grassy woodlands amongst dense tussocks of Snow Grass on clay loams derived from basalt.

Recognition: Characterised by late flowering habit, few-flowered spike, greenish to brownish pink unscented flowers with white or pink petals with a central red band and white or pink labellum with a dark yellow callus. The dorsal sepal is incurved and the lateral sepals, which are strongly gibbous at the base, are fused towards the apex early in anthesis and sometimes separate with age. The narrow petals remain incurved or spread widely. The large oblong-lanceolate labellum recurves sharply above the middle, has strongly undulate/crispate margins and a prominent deeply grooved yellow callus with a papillate apex, extending well beyond the labellum bend. The column is relatively narrow with broad appendages slightly shorter than the rostellum.

Similar species: *Prasophyllum dossenum* shares the gibbous base and the fusion of the lateral sepals with the new species but it has a much broader ovate-oblong labellum with an ovate-cuneate callus that ends just beyond the bend in the labellum. Although both *Prasophyllum holzingeri* and *Prasophyllum dossenum* grow at similar altitudes, the latter species typically finishes flowering in early December, at least 6 weeks before *Prasophyllum holzingeri* begin to flower.

Notes: This species appears to flower freely in the absence of fire. It flowers some four to six weeks later than *Prasophyllum basalticum* with which it grows sympatrically.

Conservation status: Known only from two or three sites in the Barrington Tops, all within conservation reserves but with fewer than 100 plants. It is likely that additional plants occur nearby in suitable habitat, however. Threats include invasion by Scotch Broom and alteration of the habitat by feral pigs and the fungal pathogen *Phytophthora*. A ROTAP code of 2ECit is suggested following the criteria of Briggs and Leigh (1996), while the species would also likely qualify for listing as Endangered on both state and federal legislation.

Etymology: Named in honour of William (Bill) Holzinger (1956-), a dedicated conservationist who has done much to further our knowledge of orchids in the NSW Hunter Valley and nearby Barrington Tops. Bill was the first to recognise *Prasophyllum holzingeri* as a distinct species warranting further research.

Specimens examined: NEW SOUTH WALES: Northern Tablelands: (exact locality withheld for conservation reasons), 6 March 2002, *W.Holzinger (ORG 3899)* (CANB 635449); *ibid*, 8 Feb. 1998, *W.Dowling* (CANB 640427); *ibid*, 10 Feb. 2002, W.Dowling 257 (CANB 658521).


Prasophyllum holzingerii
Barrington Tops, NSW



Prasophyllum holzingerii
Barrington Tops,
NSW

5. ***Prasophyllum pictum*** D.L.Jones & L.M.Copel., ***sp. nov.*** With affinity to *Prasophyllum dossenum* R.Bates & D.L.Jones but differing by its taller stature, more colourful flowers (brown, pink or purple tones) and narrower oblong-lanceolate labellum (3.5-4 mm wide *cf.* ovate to ovate-oblong labellum 5-6 mm wide in *P. dossenum*).

Type: NEW SOUTH WALES: Northern Tablelands: Ebor (exact locality withheld for conservation reasons), 20 Dec. 2004, *L.M. Copeland 3875 & W.E.Holzinger* (holo CANB; iso NSW, NE).

Description: Tuberous terrestrial *herb* to 350 mm tall, growing singly. *Tubers* not seen. *Leaf* terete, 20-30 cm long, 3-4 mm wide, dark green, shiny; base c. 2-3 mm diam., purplish; free lamina erect, 10-20 cm long. *Inflorescence* a moderately dense to dense spike 8-12 cm long, consisting of c. 9-22 flowers; scape often reddish or purplish. *Ovaries* at 40-50° to the rachis, obovoid, 3.5-4 mm long, 2.5-3 mm wide, turgid, green, shiny. *Flowers* sweetly scented, subsessile, 12-15 x 7-10 mm, sepals with brown, pink or purple tones, petals white with a central pink to red band, labellum white or pale pink with a yellow callus, column pink to purple. *Dorsal sepal* incurved to decurved, broadly ovate-lanceolate, 8-10 mm long, 3-4 mm wide, with three to five darker nerves; apex long-acuminate. *Lateral sepals* fused for most of their length initially, often breaking free with age and then divergent, obliquely erect, recurved, linear-lanceolate, 8.5-11 mm long, 2-2.5 mm wide, falcate, base strongly gibbous; margins involute over most of their length; apex entire, acuminate or bidentate. *Petals* porrect to widely spreading, linear, 8.5-11.5 mm long, 1.5-2 mm wide, darker nerves sometimes present on the inner surface; distal margins entire or irregular; apex acute. *Labellum* sessile, porrect in the proximal half, bent back at more than right angles near the middle; apex recurved sharply and often touching the base of the labellum. *Labellum lamina* oblong-lanceolate when flattened, 10-12 mm long, 3.5-4 mm wide, white; base shallowly gibbous; proximal margins curved; distal margins finely folded and shortly crenulate; apex apiculate. *Callus* ovate-cuneate, ending well beyond the labellum bend, 5-6 mm long, 2.5-3 mm wide near the base, tapered to the apex, with a dark green basal area; apex emarginate. *Column* porrect from the end of the ovary, c. 3 mm long, c. 4 mm wide; appendages oblong, c. 3 mm long, c. 1 mm wide, pink or purple; apex truncate. *Anther* shorter than the stigmatic plate, ovate, c. 2.5 mm long, c. 2 mm wide, dark purple. *Pollinarium* c. 3 mm long; viscidium ovate-elliptic, c. 0.4 mm long; hamulus linear, c. 0.8 mm long; pollinia c. 2.3 mm long, yellow, sectile. *Stigma* quadrate, c. 1.5 mm long, c. 2 mm wide; rostellum slightly higher than the appendages. *Capsules* not seen.

Illustration: Page 557 of Copeland (2005, as *Prasophyllum dossenum* in the broad sense).

Distribution and ecology: *Prasophyllum pictum* appears to be restricted to the Ebor district in northern NSW where it grows in grassy woodlands dominated by Snow Gum and Black Sally (*Eucalyptus stellulata*), and nearby derived grasslands. Soils are clay loams derived from basalt while altitudes are approximately 1300 m. The species appears to persist, and even thrive, in highly disturbed areas subject to intermittent grazing and occasional slashing. Plants flower from late November to late December.

Recognition: Characterised by late flowering habit, colourful flowers (brown, pink or purple tones) with a white labellum and yellow callus. The dorsal sepal is incurved to decurved and the lateral sepals, which are strongly gibbous at the base, are fully fused early in anthesis and sometimes separate with age, becoming widely divergent. The narrow petals remain incurved or spread widely. The large oblong-lanceolate labellum recurves sharply above the middle, has finely folded and shortly crenulate margins and a prominent yellow callus extending well beyond the labellum bend. The column is relatively narrow with broad appendages slightly shorter than the rostellum.

Similar species: *Prasophyllum dossenum* shares the gibbous base and the fusion of the lateral sepals with the new species but it has a much broader ovate-oblong labellum with an ovate-cuneate callus that ends just beyond the bend in the labellum. *Prasophyllum pictum* is usually taller and has more colourful flowers that are more widely spaced. The two species grow at similar altitudes but *Prasophyllum dossenum* begins flowering one to two weeks earlier. *Prasophyllum holzingeri* is also similar but shorter with greenish to brownish pink unscented flowers, lateral sepals fused towards the apex (sometimes separating with age) and a white or pink labellum with more strongly undulate/crispate margins and a dark yellow deeply grooved callus. *Prasophyllum holzingeri* also flowers much later.

Notes: *Prasophyllum pictum* was first discovered 15 years ago but was at first thought to be a variant of *Prasophyllum dossenum* (see Copeland 2005). Observations of plants near Ebor over several years, however, consistently showed them to be taller and with more colourful, widely spaced flowers. This led to multiple collections and more detailed examinations which in turn revealed further differences in floral morphology.

Conservation status: Currently known from three subpopulations all within a few kilometres and totalling approximately 200 plants. No plants occur within conservation reserves and all are vulnerable to excessive grazing and habitat degradation from introduced weeds such as Ox-eye Daisy (*Leucanthemum vulgare*), Sweet Vernal Grass (*Anthoxanthum odoratum*) and Yorkshire Fog (*Holcus lanatus*). A ROTAP code of 2E is suggested following the criteria of Briggs and Leigh (1996), while the species would also likely qualify for listing as Endangered on both state and federal legislation.

Etymology: The Latin *pictum*, dyed, painted, referring to the colourful flowers.

Specimens examined: NEW SOUTH WALES: Northern Tablelands: Ebor (exact locality withheld for conservation reasons), 13 Dec. 2003, *L.M. Copeland 3657* (NE); 4 Dec. 2005, *L.M. Copeland 4031* (CANB, NE, NSW).



Prasophyllum pictum SW of Ebor, NSW



Prasophyllum pictum
Ebor,
NSW

6. *Prasophyllum pilligaense* D.L.Jones & L.M.Copel. ***sp. nov.*** With affinity to *Prasophyllum odoratum* R.S.Rogers but differing by its much larger, crowded, spidery-looking greenish brown to brownish flowers (15-20 x 12-16 mm *cf.* 14-16 x 10-12 mm in *P. odoratum*), widely spreading, longer narrow lateral sepals with strongly involute margins (11-15 mm long cf. 8-10 mm in *P. odoratum*), widely spreading long thin petals and a larger narrowly oblong labellum with a broader (2.5-3 mm wide *cf.* 1.5 mm wide in *P. odoratum*) yellow ovate-tapered callus.

Type: NEW SOUTH WALES: North Western Slopes: Rocky Glen, c. 35 km NE of Coonabarabran, (exact locality withheld for conservation reasons), 3 Oct 2005, *L.M. Copeland 3963*, (holo CANB 673017; iso NE, NSW).

Description: Tuberous terrestrial *herb* to 450 mm tall, growing singly. *Tubers* not seen. *Leaf* terete, 30-40 cm long, 3-6 mm wide, dark green, shiny; base c. 2-4 mm diam., purplish; free lamina erect, 20-30 cm long. *Inflorescence* a dense spike 7-15 cm long, consisting of c. 20-30 flowers. *Floral bracts* ovate, 2.5-3 mm long, c. 3 mm wide, closely embracing the ovary; apex apiculate. *Ovaries* at 30-40° to the rachis, obovoid, 4-5.5 mm long, 2-2.5 mm wide, green, shiny. *Flowers* sweetly scented, sessile to subsessile, 15-20 x 12-16 mm, sepals greenish brown to brownish, petals white with a short central brown band and labellum white with a yellow callus. *Dorsal sepal* decurved to incurved, ovate-lanceolate, 11-14 mm long, 3-4 mm wide, with three to five fine darker nerves; apex long-acuminate. *Lateral sepals* free, widely divergent, obliquely erect, tips straight or slightly recurved, linear-lanceolate, 11-15 mm long, 1.5-2 mm wide, falcate, base not gibbous; margins involute for most of their length; apex entire, acuminate. *Petals* widely spreading, narrowly linear, 9-12 mm long, c. 1 mm wide, white with a red central band; distal margins sometimes slightly dilated, entire or irregular; apex subacute to obtuse. *Labellum* sessile, porrect in the proximal half, recurved at right angles or more near the middle; apex recurved and sometimes extending through the lateral sepals. *Labellum lamina* narrowly oblong when flattened, 12-15 mm long, 3-5 mm wide, white; base flat, not gibbous; proximal margins entire, curved; distal margins strongly undulate/crispate; apex obtusely apiculate. *Callus* ovate at the base then tapered to the apex, ending just beyond the labellum bend, 4-5 mm long, 2.5-3 mm wide, yellow to yellowish-green with a dark green basal area; apex entire or emarginate. *Column* porrect from the end of the ovary, c. 3.5 mm long, c. 3.5 mm wide; appendages oblong, c. 3 mm long, c. 0.6 mm wide, straight, white, pink or brown; apex obtuse. *Anther* shorter than the stigmatic plate, ovate, c. 2 mm long, c. 1.5 mm wide, brown to purplish. *Pollinarium* c. 3.5 mm long; viscidium ovate-elliptic, c. 0.3 mm long; hamulus linear, c. 1 mm long; pollinia c. 2 mm long, yellow, sectile. *Stigma* quadrate, c. 1.8 mm long, c. 1.8 mm wide, set very high on the column; rostellum higher than the appendages. *Capsules* not seen.

Distribution and ecology: Known from about five populations in the Coonabarabran district of northern New South Wales. Altitudes range from 400-500 m while the flowering period is usually late September to late October. All populations grow among scattered shrubs in woodlands on deep sandy loams derived from sandstone.

Recognition: Characterised by robust habit, large, crowded, spidery, greenish brown to brownish flowers with a white labellum and yellow callus. The dorsal sepal decurved and the lateral sepals free, thin, tapered, widely divergent, flat at the base and with revolute margins over most of their length. The long narrow petals spread widely. The large narrowly oblong labellum recurves at right angles or more near the middle, has shortly folded and crinkled margins and a prominent yellow callus extending just beyond the labellum bend. The column is relatively narrow with narrow appendages shorter than the rostellum.

Notes: This species appears to flower freely in the absence of fire.

Conservation status: Known from at least four or five populations, of which only one is conserved (Pilliga Nature Reserve). Plants are relatively uncommon at all locations and are threatened by roadworks at two of the sites. Weed invasion by African Lovegrass (*Eragrostis curvula*) is a further threat at all sites. A ROTAP code of 2VCi following the criteria of Briggs and Leigh (1996) is suggested. The species is also likely to meet the criteria of Vulnerable on state and federal legislation.

Etymology: Named in reference to the area where the species appears to be confined, the south-eastern section of a large area informally known as "The Pilliga Scrub".

Other specimens: (all localities simplified for conservation purposes) NEW SOUTH WALES: North Western Slopes: Dandry Creek road, NE of Coonabarabran, 3 Oct 2005, *L.M. Copeland 3965 & W.E.Holzinger* (CANB 673019, NE); E of Coonabrabran on road to Quirindi, Oct. 1989, *R.England (DLJ 5582)* (AD, CANB, MEL, NSW); Quirindi Road, Coonabarabran, 5 Oct. 1990, *E.Foster (DLJ 6722)* (CANB).

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Prasophyllum pilligaense
NE of Coonabarabran,
NSW

Newly Recognised and Reinstated Species of *Corunastylis* Fitzg. (Orchidaceae: Prasophyllinae), with a Proposed Infrageneric Classification of the Genus

by David L. Jones and Mark A. Clements

Abstract

During the preparation for a molecular study of *Corunastylis*, the Type collections and taxonomic status of all published taxa were reassessed. As a result it is proposed to transfer 9 species of *Prasophyllum* to *Corunastylis*, viz. *Prasophyllum albiglans* Rupp, *Prasophyllum ansatum* Fitzg., *Prasophyllum exiguum* Rupp, *Prasophyllum fusco-viride* Reader, *Prasophyllum longisepalum* Fitzg., *Prasophyllum mollissimum* Rupp, *Prasophyllum nichollsianum* Rupp, *Prasophyllum nublingii* R.S.Rogers and *Prasophyllum reflexum* Fitzg. Additionally a new infrageneric classification of *Corunastylis* is proposed including the description of *Corunastylis* subgenus *Glabriflora* D.L.Jones & M.A.Clem., and sections *Pachychila* D.L.Jones & M.A.Clem., *Glandulifera* D.L.Jones & M.A.Clem. and *Extensa* D.L.Jones & M.A.Clem.

Introduction

The genus *Corunastylis* has shown an amazing adaptive radiation in the sandstone habitats around Sydney and the Blue Mountains of New South Wales. Originally included in *Prasophyllum* these distinctive orchids, also known as "midge orchids" or "pigmy prasos", were grouped in the informal section *Micranthum* by Rupp (1949). They have also been included in *Genoplesium* (Jones & Clements 1989), but are best accommodated in *Corunastylis* (Jones *et al.* 2002).

Robert David Fitzgerald (1830-1892), 19th century Australian surveyor and botanist took an active interest in this group of orchids, assisted by a number of collectors, including G.H.Sheaffe, E. Merewether and H. Deane (Fitzgerald 1875-1893, 1885). These tiny orchids were also of major interest to the Reverend Herman Montague Rucker Rupp (1872-1956) who received a regular supply of specimens from serious collectors including Erwin Nubling (1876-1953), Isobel Bowden (1908-1986) and Alick Dockrill (1915-2011) (Rupp 1942, 1948a,b, 1950). Between them Fitzgerald and Rupp named and described some 31 taxa of these intriguing orchids, the majority (21 taxa) by Rupp. Most of these, but not all, were from the environs of Sydney.

Unfortunately for these early Australian orchid botanists, their taxa have not received the attention they merit, several remaining overlooked and languishing in *Prasophyllum*. Seven of these taxa are here transferred to *Corunastylis* following a recent detailed study of the work of these botanists; also *Prasophyllum nublingii* named by Dr R.S.Rogers (Rogers 1927). Additionally, the confused situation of *Corunastylis tepperi* F.Muell. ex Tepper is addressed, resulting in the reinstatement of *Prasophyllum fusco-viride* Reader and its transfer to *Corunastylis*. The opportunity is also taken to propose a new infrageneric classification within *Corunastylis*.

1. ***Corunastylis albiglans*** (Rupp) D.L.Jones & M.A.Clem. ***comb. nov.*** Basionym: *Prasophyllum albiglans* Rupp, *Contributions of the New South Wales National Herbarium* 1: 318, f. B, 4-7(1951).

Description: *Plant* 8-10cm tall. *Flowers* 10-17, tiny, c. 2.5mm long, green. *Dorsal sepal* c. 2.2mm long, margins glabrous, ending in a gland. *Lateral sepals* c. 2.5mm long, narrowly divergent, base fused, gibbous, tips with a small or obscure gland. *Petals* c. 1mm long, ovate-lanceolate, margins glabrous, apex with a prominent large, pure white, orbicular gland. *Labellum* ovate-oblong, margins serrulate, apex mucronate. *Callus* plate large, dark. *Column wings* notched, lobes blunt.

Flowering: March.

Localities: NSW (Pennant Hills, Cowan, Asquith).

Recognition: Short-growing species from the northern Sydney suburbs with tiny green flowers (c. 2.5mm long), all segments usually gland-tipped, base of lateral sepals gibbous, petals with a large white orbicular gland and labellum ovate-oblong with serrulate margins.

Congeners: This species has similar sized flowers to *Corunastylis ansata* which has red-brown flowers, the perianth segments without glands or with small glands, non-gibbous base to the lateral sepals and an oblong labellum with glabrous margins which are convex near the middle. It has also been linked with *Corunastylis densa* which has larger red-brown flowers (almost twice the size) and with a linear-oblong labellum with serrulate margins and a mucronate apex (Jones 2017).

2. ***Corunastylis ansata*** (Fitzg.) D.L.Jones & M.A.Clem. ***comb. nov.*** Basionym: *Prasophyllum ansatum* Fitzg., *Journal of Botany* 23: 135 (1885).

Description: *Plant* 10-12cm tall. *Leaf lamina* spreading close to the lowest flower. *Flowers* 15-20, tiny, c. 2.5mm long, red-brown, on long ovaries. *Dorsal sepal* c. 2.2mm long, margins glabrous, ending in a fine point. *Lateral sepals* c. 2.5mm long, narrowly divergent, base fused, non-gibbous, tips subobtuse, with small gland. *Petals* c. 1mm long, ovate-lanceolate, margins glabrous, apex acuminate, with a prominent gland. *Labellum claw* long. *Labellum* oblong [linear-lanceolate], light red-brown, margins glabrous, convex near middle [auricle-like lobes], apex blunt. *Callus* broad, covering most of the labellum. *Column wings* shortly notched.

Flowering: January.



TYPE specimen of *Prasophyllum ansatum* (*Corunastylis ansata*)

Localities: NSW (Mt Wilson).

Recognition: Short-growing species from the Blue Mountains with tiny red-brown flowers (c. 2.5mm long), some segments gland-tipped, base of lateral sepals non-gibbous, fused, petals with a prominent gland and labellum oblong, the margins glabrous, spreading like auricles near the middle.

Congeners: Linked with *Corunastylis densa* which has much larger crowded flowers (about twice the size) on short ovaries, acuminate tips on the lateral sepals and a pointed labellum with serrulate margins and a mucronate tip (Jones 2017). *Corunastylis albiglans* has similar sized flowers to *Corunastylis ansata* but is distinguished by its green flowers, all the perianth segments with large pure white orbicular terminal glands, gibbous base to the lateral sepals and an ovate-oblong labellum with irregularly serrulate margins.

3. ***Corunastylis exigua*** (Rupp) D.L.Jones & M.A.Clem. ***comb. nov.*** Basionym: *Prasophyllum exiguum* Rupp, *Victorian Naturalist* 65: 142 (1948).





Description: Very slender (thin) plant 10-18cm tall. *Leaf lamina* closely sheathing, ending below the lowest ovary. *Flowers* 10-20, tiny, sometimes not opening, c. 2-2.5mm long, red to red-brown, on relatively short ovaries. *Dorsal sepal* c. 1.6-2mm long, margins glabrous, apex acuminate. *Lateral sepals* c. 2.2-2.5mm long, narrowly divergent, base fused, non-gibbous, tips acuminate. *Petals* c. 1.5mm long, narrowly ovate-lanceolate, margins glabrous, apex acuminate, with a prominent gland. *Labellum claw* short. *Labellum* narrowly ovate-cuneate to narrowly triangular, 1.5-2 x 0.6-0.9mm, margins glabrous, apex acute to acuminate. *Callus* triangular, narrowing in a long taper, ending close to the labellum apex. *Column wings* shortly notched.

Flowering: June and July.

Localities: NSW (Sydney to Wollongong).

Recognition: Slender species with tiny red to reddish brown flowers, sometimes not opening fully, with acuminate tips on all segments and a narrowly ovate to narrowly triangular labellum with glabrous margins.

Congeners: Linked with *Corunastylis despectans* which has much larger darker-coloured flowers with long-acuminate tips on all the segments and a larger narrowly lanceolate labellum with irregularly serrulate margins and a long-acuminate apex.





4. ***Corunastylis fuscoviridis*** (Reader) D.L.Jones & M.A.Clem. ***comb. nov.*** Basionym: *Prasophyllum fusco-viride* Reader., *Victorian Naturalist* 14: 163 (1898).



Background: This species was previously treated as a synonym of *Prasophyllum. nigricans* R.Br. (Clements 1989) but is distinct morphologically from that species and linked with the name *Prasophyllum tepperi* F.Muell. ex Tepper which has had a confused taxonomic history and is best treated a *nomen confusum*. A taxonomic summary of this species follows in date order.

1878 The name *Prasophyllum tepperi* first appeared as a *nomen nudum* on page 140 of Mueller's *First Census of Australian Plants* in 1878, but was not included in the second census (Mueller 1889) and does not appear in Mueller's list of described taxa (Muir 1978). No specimens of *Corunastylis* sent by Tepper exist in the Mueller Herbarium at MEL (Bates 1981).

1880 The next use of the name is by Otto Tepper in a paper entitled *Native and Naturalised Plants about Ardrossan* that was published in the *Transactions and Proceedings of the Royal Society of South Australia* 3: 32-33 (May 1880). Tepper was a schoolteacher at Ardrossan in the 1870/80s and sent plant specimens to Mueller. In this paper he wrote *'only one new species has yet been discovered by me.....Baron Ferdinand von Mueller has done me the honour of naming it Prasophyllum tepperi'*. Tepper also gives a meagre, ill-defined description of the orchid thus *"stalk thin, straight, leafless, the flowers not numerous, very small, tuber large, globular, blooms in April"*. This diagnosis points to the orchid being a species of *Corunastylis* (not a *Prasophyllum*) but does not define a particular species. At least three species of *Corunastylis* occur around Ardrossan (Bates pers. comm.). Tepper's diagnosis also contains two features not consistent with the plant we call *Corunastylis tepperi* today – notably *'stalk thin, flowers not numerous'*. So although the name *Prasophyllum tepperi* was legitimately published the diagnosis provides insufficient detail for accurate identification and most importantly the proposed type material is a specimen of a *Prasophyllum* not a *Corunastylis*. For these reasons it is here treated as a *nomen confusum*.

1898 Pharmacist Felix Reader independently described *Prasophyllum fusco-viride* with a very detailed and accurate description and with a type specimen lodged at MEL.

1909 The next use of the name *Prasophyllum tepperi* is in 1909 by the Victorians Ewart, White & Rees who note that "...the name occurs practically as a nomen nudum without proper description" published a description of *Prasophyllum tepperi* based on an unchanged description from Mueller's manuscript using a Tepper collection from Ardrossan. This description is based on a single species of *Prasophyllum*, not a *Corunastylis*. This taxon is a *nomen illegimate* as it is a later homonym of *Prasophyllum tepperi* F.Muell. ex Tepper.

1909 The next use of the name *Prasophyllum tepperi* is by Dr. R.S.Rogers a few months later than the previous entry when he also realised the earlier unsatisfactory situation with the statement *'no botanical description has hitherto appeared'* and redescribed *P. tepperi* himself based on specimens he collected from Ardrossan on 17 May 1906. Rogers diagnosis of the species was based on his concept of *P. nigricans* which is at odds with that of Robert Brown – *P. nigricans sensu* Rogers *non* R.Br. plate on page 10, *An Introduction to the Study of South Australian Orchids* (1911). This taxon is a later homonym of *P. fuscoviride* Reader.

Description: Sturdy plants with a thickish leaf, 80-250mm long. *Leaf lamina* closely sheathing, ending below the flowers. *Flowers* 15-80, crowded, semi-nodding, c. 5 mm long, green with a dark purple-black labellum. *Dorsal sepal* c. 2.3 mm long, margins glabrous. *Lateral sepals* c. 3.2 mm long, divergent, base gibbous, apex blunt. *Petals* linear, c. 2.2 mm long, margins glabrous, apex often gland-tipped. *Labellum* stiffly hinged, ovate to obovate when flattened, c. 2.2 x 1.3mm, thick and fleshy, margins slightly irregular, apex blunt. *Callus* extending nearly to the labellum apex.

Flowering: February to May.

Distribution: Vic (west from Bendigo), SA (widespread and common), WA (west to Corrigin); 50-300m alt.

Recognition: Sturdy species with numerous crowded flowers which are green with a dark purple-black labellum, glabrous perianth segments and linear petals.

Congeners: Confused with *Corunastylis nigricans* which has fewer, less-crowded uniformly purplish-brown flowers.



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5. ***Corunastylis longisepala*** (Fitzg.) D.L.Jones & M.A.Clem. ***comb. nov.*** Basionym: *Prasophyllum longisepalum* Fitzg., *Journal of Botany* 23: 136 (1885).



Description: *Plant* 15-18cm tall. *Leaf lamina* 2.5cm long, extending out from the lowest flower. *Flowers* not opening, c. 5-6mm long, brownish yellow and green. *Dorsal sepal* c. 3mm long, margins glabrous, acute, ending in a fine point, no gland. *Lateral sepals* c. 5-6mm long, remaining parallel, base fused, non-gibbous, tips obtuse, no gland. *Petals* c. 2-2.5mm long, ovate-lanceolate, falcate, margins glabrous, apex obtuse, with an apical gland on the inside. *Labellum claw* long. *Labellum* tongue-shaped [linear-oblong], flat, red-brown, thick, underside keeled, margins concave near middle, glabrous, apex with a thick blunt mucro. *Callus* extending nearly to the labellum apex. *Column wings* large, not notched, subobtuse.

Flowering: March [June on type sheet].

Localities: NSW (Mt Wilson).

Recognition: Medium-sized species with relatively large brownish flowers that apparently do not open, non-gibbous lateral sepals with blunt tips and no glands, falcate petals with glabrous margins and an internal gland next to the blunt tip, and a thick oblong labellum with incurved glabrous margins and a thick blunt apical mucro.

Congeners: Linked with *Corunastylis densa* which has similar-sized red-brown flowers (shorter lateral sepals), acuminate tips on the lateral sepals and an oblong labellum with serrulate margins and a pointed apex ending in a mucro (Jones 2017).

6. ***Corunastylis mollissima*** (Rupp) D.L.Jones & M.A.Clem. ***comb. nov.*** Basionym: *Prasophyllum mollissimum* Rupp, *Victorian Naturalist* 65: 146 (1948).

Description: *Plant* 20-25cm tall. *Leaf lamina* sheathing, ending well below the flowers. *Flowers* opening freely, 5-15, uncrowded, c. 3.5-4mm long, chestnut brown. *Dorsal sepal* c. 3mm long, brown outside, green within, margins minutely glandular-hairy, acute, ending in a fine point, no gland. *Lateral sepals* c. 4mm long, divergent, nearly flat, brown and green, fused at the base, non-gibbous, tips subobtuse, no gland. Petals c. 3mm long, narrowly ovate-lanceolate, falcate, margins minutely glandular-hairy, apex acuminate, no gland. *Labellum claw* moderately long. *Labellum* broadly oblong [obovate in the drawing], rich chestnut brown, thick, densely velvety-pubescent over the whole upper surface, margins minutely glandular-hairy, apex acute. *Callus* large, mostly obscured by the pubescence, with a prominent central groove. *Column wings* deeply notched, acuminate, outer margin minute ciliate.

Flowering: April.

Localities: NSW (Heathcote, Royal National Park).

Recognition: Tall robust species with relatively large brown and green flowers, the segments without apical glands, the dorsal sepal, petals and labellum with minutely glandular-hairy margins, the labellum rich chestnut brown, densely velvety-pubescent over the whole upper surface, masking the callus.

Congeners: Linked with *Corunastylis woollsii* which has a similar general appearance and with ciliate margins on the dorsal sepal, petals and labellum, but the labellum rich chestnut brown, the whole upper surface densely velvety-pubescent and masking the callus. Also with *Corunastylis reflexa* which has a glabrous dorsal sepal and the labellum sharply recurved near the base and again near the apex, the surface lacking any dense pubescence.

7. ***Corunastylis nichollsiana*** (Rupp) D.L.Jones & M.A.Clem. ***comb. nov.*** Basionym: *Prasophyllum nichollsianum* Rupp, *Victorian Naturalist* 59: 123 (1942).

Description: *Plant* 12-18cm tall. *Leaf lamina* 2-3cm long, extending out from the lowest flower, sometimes longer than the inflorescence. *Flowers* 6-15, opening widely, c. 5-6mm long, brownish red or yellowish green, on long ovaries. *Dorsal sepal* c. 3mm long, margins glabrous, with a short linear gland. *Lateral sepals* c. 5-6mm long, broadly linear, apex acuminate, gland-tipped. *Petals* c. 3.5mm long, ovate-lanceolate, with a broad central band, margins glabrous, apex acute, gland-tipped. *Labellum* narrowly oblong, flat, margins glabrous, apex acute. *Callus* large, dark, proximal margins upturned. *Column wings* shallowly notched, anterior lobe acuminate.



Flowering: May.

Localities: NSW (Loftus).

Recognition: Medium-sized species with relatively large brownish red or yellowish green flowers on long ovaries, lateral sepals with acuminate tips and small glands, broad petals with glabrous margins and a gland-tipped acute apex and, narrowly oblong glabrous labellum with an acute apex and a large callus with the proximal margins upturned.

Congeners: Linked with *Corunastylis densa* which has similar-sized red-brown flowers densely crowded on shorter ovaries and an oblong labellum with serrulate margins and an acute apex ending in a mucro. *Corunastylis ansata* also has uncrowded flowers on long ovaries, but its flowers are about half the size of *Corunastylis nichollsiana* and the oblong labellum has glabrous margins.

8. *Corunastylis nublingii* (R.S.Rogers) D.L.Jones & M.A.Clem. ***comb. nov.*** Basionym: *Prasophyllum nublingii* R.S.Rogers, *Transactions and Proceedings of the Royal Society of South Australia* 51: 293-4 (1927).

Description: *Plant* 15-30cm tall. *Leaf lamina* sheathing, ending well below the flowers. *Flowers* opening freely, 5-20, uncrowded, c. 4.5-5mm long, reddish brown or greenish. *Dorsal sepal* c. 4 x 2mm, margins shortly hairy, apex upcurved, acuminate, no gland. *Lateral sepals* c. 4.5-5 x 1mm, divergent, fused at the base, shallowly gibbous, tips acute, no gland. Petals c. 3.5 x 0.8mm, ovate-lanceolate, margins shortly hairy, apex long-acuminate, no gland. *Labellum claw* moderately long. *Labellum* rectangular to narrowly obovate (base narrowest), c. 4 x 2mm, flat, the distal surface decorated with dark purple radiating veins, margins shortly hairy, apex apiculate. *Callus* large, deeply divided by a prominent central groove and appearing as two raised colluviate bands, extending about halfway to the labellum apex. *Column wings* deeply notched, acuminate, outer margin minute ciliate.

Flowering: January to March.

Localities: NSW (Royal National Park, Waterfall, Loftus).

Recognition: Tall robust species with relatively large reddish brown or greenish flowers, the segments without apical glands, the dorsal sepal, petals and labellum with shortly hairy margins, the labellum rectangular to narrowly obovate, the distal surface decorated with dark purple radiating veins, the callus divided by a prominent central groove and appearing as two raised colluviate bands, extending about halfway to the labellum apex.

Congeners: Linked with *Corunastylis woollsii* which has a similar general appearance and with shortly ciliate margins on the dorsal sepal, petals and labellum, but the labellum rectangular to narrowly obovate, the distal surface decorated with dark purple radiating veins, the callus extending about halfway to the labellum apex and divided by a prominent central groove and appearing as two raised colluviate bands.

9. *Corunastylis reflexa* (Fitzg.) D.L.Jones & M.A.Clem. ***comb. nov.*** Basionym:

Prasophyllum reflexum Fitzg., *Journal of Botany* 23: 137 (1885).

Description: *Plant* 20-25cm tall. *Leaf lamina* sheathing, ending well below the flowers. *Flowers* 20-30, opening, c. 3.5-4mm long, red brown. *Dorsal sepal* c. 3mm long, margins glabrous, acute, ending in a fine point, no gland. *Lateral sepals* c. 4mm long, divergent, fused in the basal half, non-gibbous, tips acute, no gland. *Petals* c. 3mm long, ovate-lanceolate, margins ciliate, apex acute, no gland. *Labellum claw* short. *Labellum* sharply recurved near the base and again near the apex, oblong when flattened, red-brown, thick, margins sometimes pinched in near the base, ciliate, apex acuminate. *Callus* broad, thick, extending nearly to the labellum apex, with a prominent central groove. *Column wings* deeply notched, acuminate, outer margin ciliate.

Flowering: June & July.

Localities: NSW (Jamberoo Mtn, Dural).

Recognition: Tall robust species with relatively large red-brown flowers, the segments without apical glands, the sepals glabrous, the petals and labellum ciliate, the labellum sharply recurved near the base and again near the apex, oblong when flattened, apex acuminate.

Congeners: Linked with *Corunastylis woollsii* which has a similar general appearance but with ciliate margins on the dorsal sepal, petals and labellum, and a thick ovate labellum held more or less flat or with a shallowly recurved apex. Also with *Corunastylis ruppii* which has yellowish green to greenish flowers with a dark purple labellum, shortly glandular-ciliate margins on the dorsal sepal, petals and labellum, shallowly gibbous lateral sepals and a flat, broadly ovate labellum, the callus not extending near the labellum apex.

New Infrageneric taxa in *Corunastylis*

Corunastylis Fitzg., *Austral. Orch.* 2(3): t.1 (1888). Type species: *Corunastylis apostasioides* Fitzg.

Anticheirostylis Fitzg. *Austral. Orch.* 2(3): back cover (March 1888): Type species: *Corunastylis apostasioides* Fitzg., superfluous substitute name for *Corunastylis*.

Genoplesium R.Br. sect. *Plesiogenum* Szlach., *Polish Bot. J.* 46(1): 12 (2001). Type species: *Genoplesium citriodorum* D.L.Jones.

A genus of two subgenera and five sections, one subgenus and four sections described here as new.

1. Subgenus *Corunastylis*. Various floral parts with hairs.

A subgenus of three sections.

1.2 Section *Corunastylis*. Dorsal sepal, petals and labellum with long coarse non-glandular hairs, labellum narrow (much longer than wide), thin-textured, labellum loosely hinged, often tremulous.

1.3 Section *Pachychila* D.L.Jones & M.A.Clem., ***sect. nov.*** (Greek *pachys* (thick), *cheilos* (lip), referring to the thick fleshy labella). Sepals glabrous, petals glabrous or with coarse non-glandular hairs, labellum broad, nearly as wide as long, thick and fleshy, with long coarse non-glandular hairs, labellum loosely hinged, often tremulous. Lectotype species: *Corunastylis archeri* (Hook.f.) D.L.Jones & M.A.Clem., here designated.

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1.4 Section *Glandulifera* D.L.Jones & M.A.Clem., ***sect. nov.*** (Latin *glans* (gland), *ferens* (carrying), bearing, referring to the glandular hairs). Various floral parts with short gland-tipped hairs, labellum stiffly hinged, thick, fleshy. Lectotype species: *Corunastylis eriochila* (Fitzg.) D.L.Jones & M.A.Clem., here designated.

2. *Corunastylis* subg. *Glabriflora* D.L.Jones & M.A.Clem., ***subg. nov.*** (Latin *glabrus* (without hairs), *flos, floris* (flower/s), referring to the absence of hairs on the flowers). Sepals, petals and labellum glabrous. Type species *Corunastylis rufa* (R.Br.) D.L.Jones & M.A.Clem., here designated.

A subgenus of two sections.

2.1. Section *Glabriflora*, Free part of leaf closely embracing the peduncle, usually ending well below the lowest ovary.

2.2 Section *Extensa* D.L.Jones & M.A.Clem., ***sect. nov.*** (Latin *extensus* (stretched out, extended), in reference to the leaf lamina extending out from the peduncle, usually arising close to the lowest ovary). Lectotype species: *Corunastylis densa* (Fitzg.) D.L.Jones & M.A. Clem., here designated.

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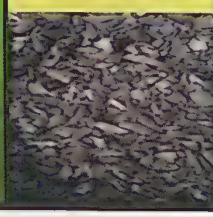
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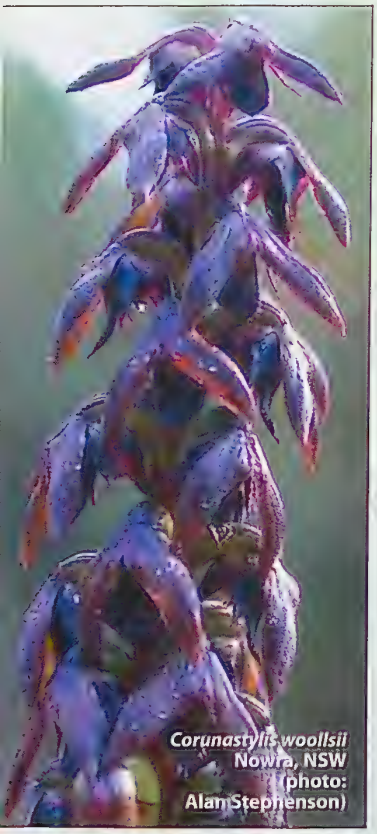
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Corunastylis woollsii
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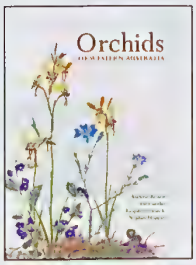
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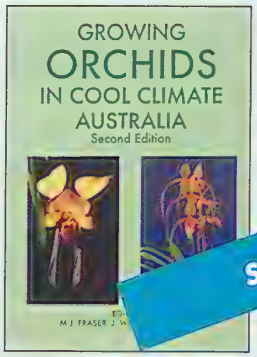
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Interestingly, a lot of the old and traditional Latin botanical names have been used in this work. The author makes a significant number of anecdotal notes and comments throughout the book, to keep the reader fully informed. It is a "must have" book for those interested in Australian orchids and historical botanical art.

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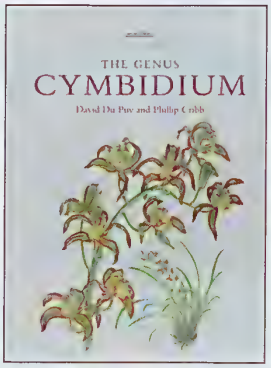
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This is an updat… ook and includes much n… members of the O… his book covers topics …rchids, Structures for growing …g media, pests and diseases, Orchid …enclature, Orchid Classification and of course how to grow many types of orchids in cool climate regions of Australia. The main section covers individual cultivation of the most popular types of orchids that we all fall in love with at the beginning... *Cymbidium*, *Cattleya*, *Oncidium*, *Paphiopedilum*, *Masdevallia*, *Stanhopea*... and much more. An invaluable reference for novice growers and those with a passion for this delightful plant family.

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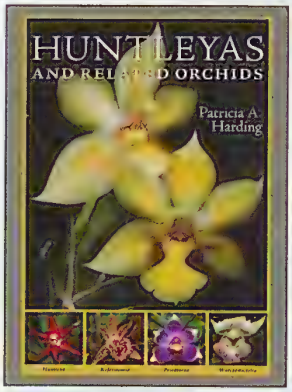
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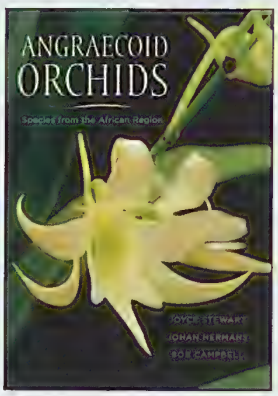
HUNTLEYAS AND RELATED ORCHIDS

by Patricia A. Harding

Revered by avid orchid collectors for its delightful, star-shaped flowers, *Huntleya* is a small group of orchids found low in the forest. *Huntleya* is a small orchid genus that includes fourteen species. They occur in wet cloud forests at medium altitudes of Guatemala, Costa Rica, South America down to Bolivia. The type species *Huntleya meleagris* also occurs in Trinidad. Besides their striking colours — from deep blue to waxy red, royal purple to almost black — flowers of this group are known for their distinctive shapes, patterns, and textures. As appealing as these lovely tropical orchids are, their identification has been confused since the first species was described in the mid-1800s. Recent DNA studies have led to a clearer understanding of relationships and, as a result of this clarity, it is now possible to sort out the taxonomic problems and identify the characteristics that set species apart. In this first book devoted to the *Huntleya* alliance, author Patricia Harding presents evidence from the scientific literature, other growers, and her own experience that will enable orchid enthusiasts everywhere to identify their plants and grow them successfully. Patricia A. Harding is an accredited American Orchid Society judge who has been growing and photographing orchids for three decades.

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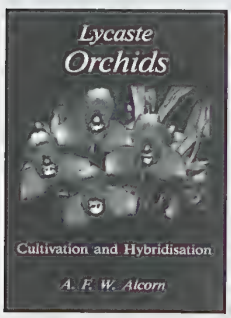
ANGRAECOID ORCHIDS: Species from the African Region

by Joyce Stewart, Johan Hermans, and Bob Campbell

These so-called 'Jewels of Africa' with their sparkling flowers, distinctive growth habit and floriferous nature are much prized and this account, the first to include the Angraecoid orchids of both Africa and Madagascar, is long awaited. It brings together, in a single volume, descriptions of all 690 species in this intriguing group of orchids and will be the essential reference for all Angraecoid orchid enthusiasts for years to come. Including such horticulturally important genera as *Angraecum*, *Aeranthes*, *Aerangis* and *Jumellea*. Stewart, Herman and Campbell have all spent time in various parts of eastern and southern Africa and precise ecological information relating to habitat, altitude preferences and flowering season of individual plants will be particularly helpful to growers. The diagnostic features of each genus are illustrated and over half the species are accompanied by exquisite photographs taken in both wild habitats and in cultivation.

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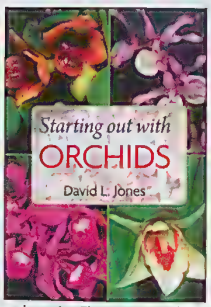
LYCASTE ORCHIDS - Cultivation and Hybridisation

by A.F.W. Alcorn

Lycaste orchids are easy to grow, and they produce flowers that range from the beautiful to the bizarre. No book previously has provided detailed cultural requirements of the Lycaste, and this book should fill that gap, and encourage new growers to take up the cultivation of this beautiful genus. A section on hybridising contains valuable information on inheritance and genetics that will benefit any hybridiser, not just the grower of Lycastes, as well as helpful hints on how to avoid pitfalls in your hybridising program. Michael Hallett, a friend of Fred Alcorn for a number of years, co-wrote this book with Fred and has completed it posthumously. He has a background in genetics, research and botany, and a passion for plants, especially orchids.

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by David L. Jones

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New Combinations in the Pterostylidinae

by David L. Jones and Christopher J. French

Taxonomists and herbaria throughout Australia hold different taxonomic views at generic level within the subtribe *Pterostylidinae*. The following new combinations are required to accommodate these different views.

Pterostylis angulata (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Diplodium angulatum* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(4): 42-52, fig.1 (2017).

Pterostylis arbuscula (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Urochilus arbusculus* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(5): 42-47, fig.2 (2017).

Pterostylis atrosanguinea (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Urochilus atrosanguineus* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(3): 49-53, fig.1 (2017).

Pterostylis ectypha (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Diplodium ectyphum* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(4): 42-52, fig.2 (2017).

Pterostylis faceta (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Plumatichilos facetus* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(4): 33-41, fig.1 (2017).

Pterostylis galgula (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Plumatichilos galgulus* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(4): 33-41, fig.2 (2017).

Pterostylis longicornis (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Plumatichilos longicornis* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(5): 27-41, fig.1 (2017).

Pterostylis meridionalis (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Diplodium meridionalis* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(4): 42-52, fig.3 (2017).

Pterostylis orbiculata (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Urochilus orbiculatus* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(3): 49-53 (2017).

Pterostylis precatoria (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Plumatichilos precatorius* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(5): 27-41, fig.2 (2017).

Pterostylis saxosa (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Plumatichilos saxosus* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(5): 27-41, (2017).

Pterostylis serotina (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Plumatichilos serotinus* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(5): 27-41, fig.3 (2017).

Pterostylis sigmoidea (D.L.Jones & C.J.French) D.L.Jones & C.J.French, ***comb. nov.*** Basionym: *Plumatichilos sigmoideus* D.L.Jones & C.J.French, *Austral. Orch. Rev.* 82(5): 27-41, fig.4 (2017). ■

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– Northmead, NSW

March 2-3 Queensland International Orchid Fair
– Beenleigh, QLD

April 7-8 Collector's Plant Fair
– Hawkesbury Racecourse, NSW

May 12-13 Mothers Day Show
– Port Macquarie, NSW

May 24-26 Casino & District Orchid Society
– Anglican Church Hall, Casino, NSW

June 23-24 Mingara Orchid Fair & Show
– Mingara, NSW

July 14-15 Tinonee Orchids Show and Workshop
– Tinonee, NSW

July 20-22 North Shore Orchid Society
– Gordon Shopping Centre, NSW

July 29 Hills District Orchids
– Winter Open Day
– Northmead, NSW

August 17-19 St. Ives Orchid Fair
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April 7–8 Collector's Plant Fair – Hawkesbury NSW
May 12–13.....Mothers Day Show – Port Macquarie NSW
May 18–20.....Orchids Out West – Hawkesbury NSW
June 23–24 Mingara Orchid Fair & Show
July 14–15 TINONEE ORCHIDS WORKSHOP, OPEN DAY & SHOW
July 20–22 Australian Orchid Conference – Windsor
July 29.....Hills District Orchids – Winter Open Day
August 3–5.....National Orchid Extravaganza – Dural
August 17–19.....St. Ives Orchid Fair
September 8 Bellingen Plant Fair – Bellingen
September 22–23 ..Plant Lovers Fair – Kariong
September 30 Hills District Orchids – Spring Open Day
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November 3–4 Tweed District Orchid Fair – Tweed Heads
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